WARNING

The Project Manual and Drawings are provided in ADOBE® ACROBAT® PDF format solely for convenience in reviewing or printing the documents for bidding purposes. Downloaded files contain scanned images of the original bid documents and are not intended to be edited or otherwise modified.

The Drawings and Project Manual are intended to be used together to provide all information required to prepare a bid for the project. Pages obtained via partial printing of the files may not contain all of the information required to prepare an accurate bid for the project.

Neither the City of Lynchburg nor Wiley & Wilson are responsible for the quality, accessibility, or speed of downloading and printing of these Documents, or for inappropriate use of partial sets of the Documents.

Printed copies of the documents can be obtained from Wiley & Wilson by contacting Monica Bozik at 434/947-1604 or P. O. Box 877, Lynchburg, Va. 24505-0877.

PROJECT MANUAL

FOR

CITY OF LYNCHBURG

PIGEON CREEK INTERCEPTOR REPLACEMENT - PHASE II-B

City Project No. 01092-S



April 30, 2003

BID SET

TABLE OF CONTENTS

	PAGE
ADVERTISEMENT. INSTRUCTIONS TO BIDDERS. 00100/ BID FORM. 00310/ ESCROW AGREEMENT. CONSTRUCTION AGREEMENT OR CONTRACT. CONTRACTOR'S QUALIFICATION STATEMENT. CONTRACT BOND. CERTIFICATE OF INSURANCE. APPLICATION AND CERTIFICATION FOR PAYMENT AND CONTINUATION SHEET. DBE USAGE STATUS FORM. AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS. STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT. SUPPLEMENTARY CONDITIONS. EPA SPECIAL CONDITIONS. DEQ SPECIAL CONDITIONS. STANDING INDEX.	1 - 00100/6 1 - 00310/5 1 - 00311/41 - 21 - 21 - 21 - 21 - 21 - 21 - 21 - 21 - 21 - 21 - 43 1 - 00815/6 I-1 - EI-19 C-1 - SC-10
DIVISION 1 - GENERAL REQUIREMENTS	
SECTION 01000 - GENERAL REQUIREMENTS01000/1	- 01000/11
DIVISION 2 - SITE WORK	
SECTION 02100 - SITE PREPARATION. 02100/ SECTION 02220 - TRENCHING AND BACKFILLING. 02220/1 SECTION 02500 - PAVING AND SURFACING. 02500/ SECTION 02720 - STORM SEWER SYSTEM. 02720/ SECTION 02730 - SANITARY SEWER SYSTEM. 02730/1 SECTION 02750 - SEWER LINE CLEANING. 02750/ SECTION 02760 - TELEVISION INSPECTION OF SEWER LINES. 02760/ SECTION 02770 - SEWER FLOW CONTROL. SECTION 02780 - LINER FOR SEWER REHABILITATION. 02780/ SECTION 02930 - SEEDING. 02930/	- 02220/13 1 - 02500/6 1 - 02720/4 - 02730/15 1 - 02750/2 1 - 02760/2 02770/1 1 - 02780/6 1 - 02930/5
STANDARD DRAWINGS	28 PAGES
PERMITS AND REGULATORY NOTICES	6 PACES

END OF TABLE OF CONTENTS

THOMAS L. FITZGERALD No. 036727

OH 130/03

TOWAL ENGINE

202106.96

TOC/1

ADVERTISEMENT

BIDS FOR PIGEON CREEK INTERCEPTOR REPLACEMENT - PHASE II-B, INCLUDING REPLACEMENT AND REHABILITATION OF APPROXIMATELY 6,000 FEET OF SANITARY SEWER, INCLUDING ASSOCIATED OFF ROAD ACCESS AND ENVIRONMENTAL PROTECTION MEASURES, WILL BE RECEIVED BY THE CITY OF LYNCHBURG IN THE PROCUREMENT DIVISION, 900 CHURCH STREET, THIRD FLOOR, CITY HALL, LYNCHBURG, VA 24504 UNTIL 3:00 PM FEBRUARY 11, 2004, AND WILL BE PUBLICLY OPENED AND READ ALOUD IN THE BIDDER'S ROOM, THIRD FLOOR, CITY HALL.

BID DOCUMENTS MAY BE OBTAINED FROM WILEY & WILSON, UPON RECEIPT OF A NONREFUNDABLE PAYMENT OF \$40.00 FOR EACH SET. BID DOCUMENTS MAY BE VIEWED AND PRINTED DIRECTLY FROM THE CITY'S WEBSITE AT HTTP://WWW.LYNCHBURGVA.GOV/PROCUREMENT.

BID DOCUMENTS, PROJECT MANUAL, AND DRAWINGS ARE OPEN TO THE PUBLIC FOR INSPECTION AT THE FOLLOWING LOCATIONS: WILEY & WILSON, LYNCHBURG, VA; DODGE PLAN ROOM, ROANOKE; VALLEY CONSTRUCTION NEWS, ROANOKE; AND THE DEPARTMENT OF MINORITY BUSINESS ENTERPRISES, LYNCHBURG.

A MANDATORY PRE-BID CONFERENCE WILL BE HELD AT 10:00 AM, JANUARY 28, 2004 AT THE TRAINING ROOM, SECOND FLOOR, CITY HALL, 900 CHURCH STREET, LYNCHBURG, VIRGINIA.

ALL REQUESTS FOR CLARIFICATION OR ADDITIONAL INFORMATION MUST BE MADE IN WRITING TO V. ELOISE BOWLING, CPPB, SENIOR BUYER, PROCUREMENT DIVISION, BY FACSIMILE (434) 845-0711 OR E-MAIL <u>ELOISE.BOWLING@LYNCHBURGVA.GOV</u> AND RECEIVED BY 2:00 PM, FEBRUARY 4, 2004.

THIS IS A FEDERAL AND STATE FUNDED PROJECT. BIDDERS AND CONTRACTORS PERFORMING WORK UNDER THIS ADVERTISEMENT ARE BOUND BY THE REQUIREMENTS OF THE PRESIDENT'S EXECUTIVE ORDER NOS. 11246, 11375, 11625, AND 12138; CIVIL RIGHTS ACT OF 1964; THE MBE/WBE REQUIREMENTS OF 40 CFR 33.240, AND THE CERTIFICATION OF NON SEGREGATED FACILITIES. BIDDERS MUST ALSO MEET REQUIREMENTS OF THE SPECIAL CONDITIONS OF THE PROJECT MANUAL; TITLE 2.2, CHAPTER 43, PARAGRAPH 2.2-4311, EMPLOYMENT DISCRIMINATION PROHIBITIONS, AND PARAGRAPH 2.2-4312, DRUG FREE WORKPLACE.

END OF ADVERTISEMENT

INSTRUCTIONS TO BIDDERS

- 1. GENERAL: TO BE VALID FOR CONSIDERATION, BIDS MUST BE COMPLETED AND SUBMITTED IN ACCORDANCE WITH THESE INSTRUCTIONS TO BIDDERS. ALL INDIVIDUAL BID UNIT PRICE ITEMS MUST BE FILLED IN REGARDLESS OF THE QUANTITY SHOWN.
- 2. BIDDING DOCUMENTS WILL BE PROVIDED AS INDICATED IN THE ADVERTISEMENT.
- 3. QUALIFICATION OF BIDDERS: EACH BIDDER MUST BE PREPARED TO SUBMIT WITHIN 5 CALENDAR DAYS OF THE OWNER'S REQUEST WRITTEN EVIDENCE OF HIS QUALIFICATIONS FOR THE PROJECT INCLUDING FINANCIAL DATA, PREVIOUS EXPERIENCE, AND EVIDENCE OF AUTHORITY TO CONDUCT BUSINESS IN THE JURISDICTION WHERE THE PROJECT IS LOCATED.
- 4. EXAMINATION OF BID DOCUMENTS AND SITE:
- 4.01 BEFORE SUBMITTING BIDS, EACH BIDDER MUST EXAMINE BID DOCUMENTS THOROUGHLY; FAMILIARIZE HIMSELF WITH FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES, AND REGULATIONS AFFECTING THE WORK; AND CORRELATE HIS OBSERVATIONS WITH REQUIREMENTS OF THE BID DOCUMENTS.
- 4.02 BIDDERS ARE REQUESTED AND EXPECTED TO VISIT THE SITE OF THE PROJECT TO ALERT THEMSELVES TO LOCAL AND SPECIAL CONDITIONS WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION OF THE PROJECT SUCH AS: LABOR AND TRANSPORTATION, HANDLING AND STORAGE OF MATERIALS, THE AVAILABILITY OF MATERIALS, SITE ACCESS, AND GEOLOGIC FEATURES. FAILURE TO MAKE SUCH INVESTIGATIONS SHALL NOT RELIEVE THE SUCCESSFUL BIDDER FROM PERFORMING AND COMPLETING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
 - A. A MANDATORY **PRE-BID CONFERENCE** WILL BE HELD AT THE TIME AND PLACE STATED IN THE ADVERTISEMENT.

5. INTERPRETATIONS:

- 5.01 NO ORAL INTERPRETATIONS OF THE BID DOCUMENTS WILL BE MADE TO ANY BIDDER. TO BE GIVEN CONSIDERATION, REQUESTS FOR INTERPRETATIONS MUST BE RECEIVED IN TIME TO ALLOW PREPARATION OF WRITTEN RESPONSE AT LEAST 5 DAYS PRIOR TO DATE FIXED FOR OPENING OF BIDS. INTERPRETATIONS WILL BE ISSUED IN THE FORM OF WRITTEN ADDENDA TO THE BID DOCUMENTS AND MAILED TO ALL PARTIES RECORDED BY WILEY & WILSON AS HAVING RECEIVED BID DOCUMENTS, PRIOR TO SCHEDULED OPENING OF BIDS. ONLY INTERPRETATIONS BY FORMAL WRITTEN ADDENDA WILL BE BINDING.
- 5.02 ALL COMMUNICATIONS IN REGARD TO INTERPRETATIONS AND ANY OTHER MATTERS RELATED TO BIDDING THIS PROJECT SHALL BE ADDRESSED TO THE CITY OF LYNCHBURG, OFFICE OF PROCUREMENT, TELEPHONE 434-455-3961 OR FAX 434-845-0711.
- 6. SUBSTITUTIONS OF MATERIAL OR EQUIPMENT OR BOTH MAY BE OFFERED IN ACCORDANCE WITH DIVISION 1 GENERAL REQUIREMENTS.
- 7. BID SUBMISSION:
- 7.01 SUBMIT BIDS USING FORMS FURNISHED BY WILEY & WILSON AND FILL IN ALL BLANK SPACES ON THE FORM. REPEAT NOTATION "CONTRACTOR'S CURRENT VIRGINIA LICENSE NO. _____" ON OUTSIDE OF INNER ENVELOPE CONTAINING BID AND BID SECURITY, AND PLACE THIS ENVELOPE WITHIN ANOTHER ENVELOPE ADDRESSED TO:

- A. CITY OF LYNCHBURG
 OFFICE OF PROCUREMENT
 900 CHURCH STREET, P.O. BOX 60
 LYNCHBURG, VA 24505
 ATTN: V. ELOISE BOWLING, SENIOR BUYER
- 7.02 BOTH THE INNER AND OUTER ENVELOPES SHALL HAVE NOTED THEREON:
 - A. "BID FOR CONSTRUCTION OF REPLACEMENT OF PIGEON CREEK INTERCEPTOR PHASE II-B."
 - B. THE BIDDER'S NAME AND ADDRESS.
- 7.03 THE CONTRACTOR MUST SUBMIT WITH HIS BID A SIGNED AND NOTARIZED COPY OF THE PRE-BID CONFERENCE ACKNOWLEDGEMENT AND ATTACH A COMPLETED COPY OF AIA DOCUMENT A305 CONTRACTOR'S QUALIFICATION STATEMENT. THESE DOCUMENTS SHALL BE PUT IN A SEPARATE SEALED ENVELOPE AND PLACED IN THE OUTER ENVELOPE OF THE BID SUBMITTAL ENVELOPE.
- 7.04 BID SECURITY SHALL BE ACCOMPANIED BY A CASHIERS CHECK OR AN ACCEPTABLE BID BOND IN THE AMOUNT OF 5 PERCENT OF THE BASE BID.
- 7.05 RECEIPT DEADLINE FOR BIDS WILL BE AS STATED IN THE ADVERTISEMENT.
 - A. NO BIDDER SHALL WITHDRAW, MODIFY, OR CANCEL ANY PART OF HIS BID FOR THE NUMBER OF DAYS STATED ON THE BID FORM FOLLOWING THIS DATE AND TIME EXCEPT AS PROVIDED BY CODE OF VIRGINIA SECTION 2.2-4330(A) PROCEDURE (i).
- 7.06 BIDS WILL BE OPENED PUBLICLY IN ACCORDANCE WITH ADVERTISEMENT.
- 7.07 MODIFICATION AND WITHDRAWAL OF BIDS: BIDS MAY BE MODIFIED OR WITHDRAWN BY AN APPROPRIATE DOCUMENT DULY EXECUTED (IN THE MANNER THAT A BID MUST BE EXECUTED) AND DELIVERED TO THE PLACE WHERE BIDS ARE TO BE SUBMITTED AT ANY TIME PRIOR TO THE OPENING OF BIDS.
- 7.08 WITHDRAWAL OF BIDS AFTER DATE FOR SUBMISSION: IN ACCORDANCE WITH PROCEDURE (i) OF SECTION 2.2-4330(A) OF THE CODE OF VIRGINIA, THE BIDDER WILL HAVE 2 BUSINESS DAYS AFTER THE OPENING OF BIDS WITHIN WHICH TO CLAIM IN WRITING ANY MISTAKE AS DEFINED IN SAID SECTION AND WITHDRAW HIS BID, PROVIDED SUCH MISTAKE BE PROVED FROM THE CONTRACTOR'S WORK PAPERS.
 - A. DEFINITION: CONTRACTOR'S WORK PAPERS ARE THE ORIGINAL WORK PAPERS, DOCUMENTS, AND MATERIALS USED IN THE PREPARATION OF THE BID AS REFERRED TO IN SECTION 2.2-4330(A) OF THE CODE OF VIRGINIA.
- 8. BONDS AND DAMAGES:
- 8.01 BONDS SHALL BE WITH A SURETY COMPANY ACCEPTABLE TO THE OWNER.
- 8.02 A PERFORMANCE BOND AND A LABOR AND MATERIAL PAYMENT BOND WILL BE REQUIRED IN THE AMOUNT OF 100 PERCENT OF THE BID.
- 8.03 LIQUIDATED DAMAGES SHALL BE PAID AS INDICATED IN THE AGREEMENT.
- 9. AWARD OF CONTRACT:
- 9.01 THE AWARD OF THE CONTRACT WILL BE TO THE RESPONSIVE BIDDER SUBMITTING THE LOWEST BASE BID WHOSE QUALIFICATIONS INDICATE THE AWARD WILL BE IN THE

BEST INTEREST OF THE OWNER AND WHOSE BID MEETS THE PRESCRIBED REQUIREMENTS.

- 9.02 BEFORE THE CONTRACT IS AWARDED, THE CONTRACTOR SUBMITTING THE LOWEST BID MUST SATISFY THE CITY THAT HE HAS THE REQUISITE ORGANIZATION, CAPITAL, EQUIPMENT, ABILITY, PERSONNEL, AND AT LEAST 5 YEARS EXPERIENCE IN MUNICIPAL TYPE WORK FOR WHICH HE HAS SUBMITTED A BID. EACH BIDDER SHALL, WITH HIS BID, SUBMIT A LIST OF AT LEAST FIVE PROJECTS OF SIMILAR SIZE AND DOLLAR VALUE COMPLETED WITHIN THE LAST 5 YEARS, GIVING LOCATION, DOLLAR VALUE, YEAR COMPLETED, AND THE NAME (S) OF THE OWNER (S) AND ENGINEER (S). THE CONTRACTOR SHALL VERIFY TO THE CITY THAT HE HAS SUFFICIENT AND QUALIFIED PERSONNEL TO PROVIDE FOR THE CONTACT WORK AND HAVE THE ABILITY TO PROVIDE THE NECESSARY MATERIALS AND EQUIPMENT ON AN EMERGENCY BASIS DURING NON-REGULAR HOURS. FAILURE BY THE LOWEST BIDDER TO SUFFICIENTLY SATISFY THE CITY ON HIS ABILITY TO MEET ANY OF THE ABOVE REQUIREMENTS WILL SERVE AS GROUNDS FOR REJECTION OF THE BID.
- 9.03 THE OWNER RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS AND WAIVE ANY AND ALL INFORMALITIES AND THE RIGHT TO DISREGARD ALL NONCONFORMING OR CONDITIONAL BIDS OR COUNTERPROPOSALS.
- 9.04 UNLESS CANCELED OR REJECTED, A RESPONSIVE BID FROM THE LOWEST RESPONSIBLE BIDDER SHALL BE ACCEPTED AS SUBMITTED, EXCEPT THAT IF THE BID FROM THE LOWEST RESPONSIBLE BIDDER EXCEEDS AVAILABLE FUNDS, PURSUANT TO SECTION 18-158 OF THE LYNCHBURG PROCUREMENT ORDINANCE, THE OWNER MAY NEGOTIATE WITH THE APPARENT LOW BIDDER TO OBTAIN A CONTRACT PRICE WITHIN AVAILABLE FUNDS.
 - A. PROCEDURES FOR NEGOTIATIONS: IF THE OWNER WISHES TO NEGOTIATE WITH THE APPARENT LOW BIDDER TO OBTAIN A CONTRACT PRICE WITHIN AVAILABLE FUNDS, NEGOTIATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
 - THE USING AGENCY SHALL PROVIDE THE DIRECTOR OF PUBLIC WORKS, WITH A WRITTEN DETERMINATION THAT THE APPARENT LOW BID EXCEEDS AVAILABLE FUNDS. SAID DETERMINATION SHALL BE CONFIRMED IN WRITING BY THE DIRECTOR OF FINANCE OR HIS DESIGNEE. THE USING AGENCY SHALL ALSO PROVIDE THE APPROPRIATE DIRECTOR WITH A SUGGESTED REDUCTION IN SCOPE FOR THE PROPOSED PURCHASE.
 - (2) THE DIRECTOR SHALL ADVISE THE LOWEST RESPONSIBLE BIDDER, IN WRITING, THAT THE PROPOSED PURCHASE EXCEEDS AVAILABLE FUNDS. HE SHALL FURTHER SUGGEST A REDUCTION IN SCOPE FROM THE PROPOSED PURCHASE, AND INVITE THE LOWEST RESPONSIBLE BIDDER TO AMEND ITS BID PROPOSAL BASED UPON THE PROPOSED REDUCTION IN SCOPE.
 - (3) REPETITIVE INFORMAL DISCUSSIONS WITH THE LOWEST RESPONSIBLE BIDDER FOR PURPOSES OF OBTAINING A CONTRACT WITHIN AVAILABLE FUNDS SHALL BE PERMISSIBLE.
 - (4) THE LOWEST RESPONSIBLE BIDDER SHALL SUBMIT AN ADDENDUM TO ITS BID, WHICH ADDENDUM SHALL INCLUDE: THE CHANGE IN SCOPE FOR THE PROPOSED PURCHASE, THE REDUCTION IN PRICE, AND THE NEW CONTRACT VALUE.
 - (5) IF THE PROPOSED ADDENDUM IS ACCEPTABLE TO THE OWNER, THE OWNER MAY AWARD A CONTRACT WITHIN FUNDS AVAILABLE TO THE LOWEST RESPONSIBLE BIDDER BASED UPON THE AMENDED BID PROPOSAL.

- (6) IF THE OWNER AND THE LOWEST RESPONSIBLE BIDDER CANNOT NEGOTIATE A CONTRACT WITHIN AVAILABLE FUNDS, ALL BIDS SHALL BE REJECTED.
- 9.05 REQUIREMENTS FOR SOLICITATION AND PARTICIPATION OF MINORITY BUSINESS AND WOMEN OWNED BUSINESS ENTERPRISES (MBE/WBE), REFER TO 40 CFR 33.240, AND:
 - A. AFFIRMATIVE STEPS: BIDDERS/OFFERERS SHALL TAKE AFFIRMATIVE STEPS IN COMPLIANCE WITH STATE AND FEDERAL REGULATIONS, DURING PREPARATION OF, AND PRIOR TO SUBMISSION OF BIDS OR CLOSING DATE FOR RECEIPT OF INITIAL OFFERS, TO RECRUIT AND ENCOURAGE MBE AND WBE FIRM PARTICIPATION IN PROJECT WORK. SUCH EFFORTS INCLUDE:
 - (1) THE RECRUITMENT AND UTILIZATION OF SMALL, MBE/WBE FIRMS FOR ANY SUBCONTRACT WORK AT ANY TIER, FOR ANY PORTION OF THE WORK INVOLVING ANY CONSTRUCTION OR SERVICES TO BE PERFORMED ON THIS CONTRACT:
 - (2) THE APPLICABLE MBE/WBE FIRM "FAIR SHARE" PARTICIPATION GOALS BASED ON DOLLAR OBJECTIVES FOR ALL PROCUREMENT ACTIVITIES UNDERTAKEN BY THIS PROJECT ARE ESTABLISHED AS FOLLOWS:

	MBE %	WBE
CONSTRUCTION	2.6	1.5
EQUIPMENT	0.3	1.7
SERVICES	1.9	0.8
SUPPLIES	0.8	0.6
	1	
CONTRACT TOTALS	5.6	4.6

THE CONTRACTOR SHALL MAKE EVERY REASONABLE ATTEMPT TO ACHIEVE THE GOALS AS STATED ABOVE. THE APPARENT LOW BIDDER SHALL PROVIDE A LISTING OF MBE AND WBE FIRMS PROPOSED FOR USE ON THIS PROJECT, INCLUDING THE TYPE OF WORK THAT THEY WILL PERFORM AND THE ESTIMATED CONTRACT VALUES FOR THIS WORK.

- (3) THE CONTRACTOR SHALL IMPLEMENT THE SPECIFIC AFFIRMATIVE ACTION STEPS AS OUTLINED IN THE FEDERAL GUIDANCE AND INSTRUCTIONS PERTAINING TO MBE/WBE UTILIZATION UNDER FEDERAL GRANTS, COOPERATIVE AGREEMENTS AND INTERAGENCY AGREEMENTS.
- (4) THE BIDDER SHALL PROVIDE COMPLETE DOCUMENTATION, WHICH DEMONSTRATES ALL POSITIVE EFFORTS MADE; THIS MAY INCLUDE SIGNED TRANSCRIPTS OF PHONE CONVERSATIONS, SUBCONTRACT DOCUMENTS, FEE PROPOSALS AND WORK ORDERS PERTAINING TO NEGOTIATIONS WITH MBE/WBE CONTRACTORS.
- (5) THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN A CURRENT SOLICITATION LIST OF MINORITY AND FEMALE RECRUITMENT SOURCES, AND ASSURE MBE AND WBE FIRMS ARE SOLICITED ONCE THEY ARE IDENTIFIED. THIS MAY INCLUDE USING THE SERVICES AND ASSISTANCE OF THE SMALL BUSINESS ADMINISTRATION AND THE OFFICE OF MINORITY BUSINESS ENTERPRISES OF THE U.S. DEPARTMENT OF COMMERCE TO RECRUIT MORE MBE/WBE FIRMS DURING THE PROJECT.

- (6) WHEN FEASIBLE, THE OFFEROR SHALL SEGMENT TOTAL WORK REQUIREMENTS TO PERMIT MAXIMUM MBE/WBE PARTICIPATION AND ESTABLISH DELIVERY SCHEDULES TO ENCOURAGE MBE/WBE PARTICIPATION.
- (7) ASSURING THAT MBE AND WBE FIRMS ARE SOLICITED WHENEVER THEY ARE POTENTIAL SOURCES OF GOODS OR SERVICES THROUGHOUT THE TERM OF THE PROJECT. THIS MAY INCLUDE SENDING LETTERS OR MAKING OTHER PERSONAL CONTACT WITH MBE AND WBE FIRMS, PRIVATE AGENCIES, AND STATE ASSOCIATIONS (E.G., THOSE WHOSE NAMES APPEAR ON LISTS PREPARED BY EPA OR THE RECIPIENT AND OTHER MBE/WBE KNOWN TO THE BIDDER/OFFEROR). MBE AND WBE FIRMS SHOULD BE CONTACTED WHEN OTHER POTENTIAL SUBCONTRACTORS ARE CONTACTED, WITHIN REASONABLE TIME PRIOR TO BID SUBMISSION OR CLOSING DATE FOR RECEIPT OF INITIAL OFFERS.

THOSE LETTERS OR OTHER CONTACTS SHOULD COMMUNICATE THE FOLLOWING:

SPECIFIC DESCRIPTION OF THE WORK TO BE CONTRACTED;

HOW AND WHERE TO OBTAIN A COPY OF PLANS AND SPECIFICATIONS OR OTHER DETAILED INFORMATION NEEDED TO PREPARE A DETAILED PRICE QUOTATION;

DATE THE QUOTATION IS DUE TO THE BIDDER/OFFEROR;

NAME, ADDRESS, AND PHONE NUMBER OF THE PERSON IN THE BIDDER/OFFEROR FIRM WHOM THE PROSPECTIVE MBE/WBE SUBCONTRACTOR SHOULD CONTACT FOR ADDITIONAL INFORMATION.

- (8) THE CONTRACTOR AND ALL SUBCONTRACTORS MUST MAINTAIN DOCUMENTATION AND RECORDS OF ALL SOLICITATIONS OF OFFERS FOR SUBCONTRACTS FROM MBE AND WBE CONSTRUCTION CONTRACTORS AND SUPPLIERS, THIS SHALL INCLUDE PROOF OF CIRCULATION OF SOLICITATIONS TO MBE AND WBE CONTRACTOR ASSOCIATIONS AND OTHER BUSINESS ASSOCIATIONS.
- (9) IMMEDIATELY FOLLOWING DETERMINATION OF THE APPARENT LOW BIDDER, THE CONTRACTOR MUST FURNISH TO THE GRANT RECIPIENT ALL PERTINENT DOCUMENTATION, DEMONSTRATING GOOD FAITH EFFORTS TO OBTAIN MBE/WBE PARTICIPATION IN THE CONTRACT OR SUBCONTRACTS FOR MATERIALS OR SERVICES, INCLUDING QUOTES FROM THESE BUSINESSES, PROOF OF SOLICITATION AND PROJECTED UTILIZATION WITH NAMES AND CONTRACT AMOUNTS LISTED.
- (10) FOLLOWING THE AWARD OF CONTRACTS AND CONTINUING THROUGH THE TERM OF THE CONTRACT, MBE/WBE UTILIZATION SHALL BE TRACKED AND REPORTED TO THE GRANTEE AS OUTLINED IN THE FEDERAL MBE/WBE UTILIZATION REPORTING GUIDELINES.
- B. BIDDERS/OFFERERS MUST DEMONSTRATE COMPLIANCE WITH MBE/WBE REQUIREMENTS TO BE DEEMED RESPONSIBLE. FOR THIS PROJECT THE MBE GOAL IS 5.6 PERCENT AND THE WBE GOAL IS 4.6 PERCENT. DEMONSTRATION OF COMPLIANCE MAY INCLUDE THE FOLLOWING INFORMATION; HOWEVER, THE RECIPIENT MAY SPECIFY OTHER METHODS OF DEMONSTRATING COMPLIANCE.

- (1) NAMES, ADDRESSES, AND PHONE NUMBERS OF ALL MBE/WBE FIRMS CONTACTED AND THOSE SELECTED TO PERFORM WORK.
- (2) SPECIFIC WORK TASKS TO BE PERFORMED BY THE MBE/WBE FIRMS.
- (3) THE TOTAL DOLLAR AMOUNT OF WORK TO BE PERFORMED BY MBE/WBE FIRMS, SHOWING TOTAL TO MBE FIRMS AND TOTAL TO WBE FIRMS SEPARATELY.
- (4) DESCRIPTION OF CONTACTS TO MBE AND WBE ORGANIZATIONS, AGENCIES AND ASSOCIATIONS WHICH SERVICE MBE/WBE FIRMS, INCLUDING NAMES OF ORGANIZATIONS, AGENCIES, AND ASSOCIATIONS AND DATES OF CONTACTS
- (5) DESCRIPTION OF DIRECT CONTACTS TO MBE AND WBE FIRMS, INCLUDING NUMBER OF CONTACTS, TYPE OF SERVICE OR WORK SOLICITED (I.E., EQUIPMENT OR MATERIAL SUPPLIER, SITE WORK SUPPORT, TRANSPORT SERVICES, ELECTRICAL SUBCONTRACTORS, PLUMBERS, ADMINISTRATIVE ASSISTANCE, ETC.), WITH THE DATES OF EACH CONTACT.
- C. SUCCESSFUL BIDDERS/OFFERERS SHALL TAKE REASONABLE AFFIRMATIVE STEPS TO SUBCONTRACT WITH MBE'S AND WBE'S WHENEVER ADDITIONAL SUBCONTRACTING OPPORTUNITIES ARISE DURING THE PERFORMANCE OF THE CONTRACT.
- D. EACH PARTY TO A SUBAGREEMENT SHALL ALSO TAKE THE AFFIRMATIVE STEPS 1 THROUGH 5 ABOVE.
- 9.06 QUALIFICATIONS: BIDDERS SHALL COMPLETE THE QUALIFICATIONS REPORT ATTACHED TO THE BID FORM.
- 9.07 EQUAL OPPORTUNITY REPORT STATEMENT: BIDDERS SHALL COMPLETE THE EQUAL OPPORTUNITY REPORT STATEMENT ATTACHED TO THE BID FORM.
- 9.08 ANTI-COLLUSION STATEMENT: BIDDERS SHALL COMPLETE THE ANTI-COLLUSION STATEMENT ATTACHED TO THE BID FORM. FAILURE TO SIGN AND NOTARIZE THIS STATEMENT MAY RESULT IN REJECTION OF THE BID.
- 9.09 SUBMISSION OF POST-BID INFORMATION SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

END OF INSTRUCTIONS TO BIDDERS

BID FORM

SENIOR BUYER
OFFICE OF PROCUREMENT
CITY OF LYNCHBURG
P.O. BOX 60
900 CHURCH STREET, CITY HALL
LYNCHBURG, VA 24505

GENTLEMEN:

		ERSIGN															
STUL	DIED	\mathtt{THE}	DRAWI	NGS	AND	PROJE	ECT N	IANUAL	FOF	R RE	PLAC	EMENT	OF	PIC	EON	CRI	EEK
		TOR -															
		S, ANI															
COME	PLETE	\mathtt{THE}	WORK	REQU	JIRED	FOR	\mathtt{THE}	PROJE	CT,	IN	STRI	CT AC	CORD	ANCE	WIT	'H :	THE
		AND E															
PLAN	INERS	, DAT	ED AP	RIL 3	30, 2	003 I	'OGETI	HER WI	TH		ADD	ENDUM	(S),	ISS	UED :	DURI	ING
BIDI	DING	PERIO	D AND	HERE	BY A	CKNOWI	LEDGE	D, SUE	BJECT	TO	THE	TERMS	AND	CON	DITI	SNC	OF
THE	AG	REEME	NT	FOR	\mathtt{THE}	St	JM	OF									

(\$) WHICH SHALL BE REFERRED TO HEREINAFTER AS THE BASE BID.

THE BASE BID IS FOUNDED UPON FURNISHING EQUIPMENT AND MATERIALS OF SPECIFIED MANUFACTURERS. SUBSTITUTE EQUIPMENT OR MATERIALS OF OTHER MANUFACTURERS MAY BE OFFERED FOR THE OWNER'S CONSIDERATION IN ACCORDANCE WITH DIVISION 1 - GENERAL REQUIREMENTS.

IT IS UNDERSTOOD AND AGREED THAT THE OWNER, IN PROTECTING HIS BEST INTEREST, RESERVES THE RIGHT TO:

REJECT ANY OR ALL BIDS,

ACCEPT ANY BID AT THE BASE BID PRICE, WHEREUPON THE CONTRACTOR SHALL FURNISH EQUIPMENT AND MATERIALS AS SPECIFIED.

THE BASE BID SHALL INCLUDE PROVISION OF ALL MATERIALS AND SERVICES REQUIRED TO ACCOMPLISH THE INTERCEPTOR REPLACEMENT AND ASSOCIATED IMPROVEMENTS AS SHOWN ON THE PROJECT PLANS, INCLUDING ALL ENVIRONMENTAL PROTECTION AND SITE RESTORATION ACTIVITIES.

WE ARE PROPERLY EQUIPPED TO EXECUTE WORK OF THE CHARACTER AND EXTENT INDICATED BY THE BIDDING DOCUMENTS AND SO COVERED BY THIS BID AND WILL ENTER INTO AGREEMENT FOR THE EXECUTION AND COMPLETION OF THE WORK IN ACCORDANCE WITH THE DRAWINGS, PROJECT MANUAL, AND THIS BID; AND WE FURTHER AGREE THAT IF AWARDED THE CONTRACT, WE WILL COMMENCE THE WORK ON THE DATE STATED IN "NOTICE TO CONTRACTOR TO PROCEED" AND THE WORK BE SUBSTANTIALLY COMPLETE WITHIN 270 CALENDAR DAYS.

ENCLOSED HEREWITH IS THE FOLLOWING SECURITY, OFFERED AS EVIDENCE THAT THE UNDERSIGNED WILL ENTER INTO AGREEMENT FOR THE EXECUTION AND COMPLETION OF THE WORK IN ACCORDANCE WITH THE DRAWINGS AND PROJECT MANUAL:

CASHIER'S CHECK FOR THE SUM OF	
NAME OF BANK	
BIDDER'S BOND IN AMOUNT OF	
BOND ISSUED BY	

SELECTION OF SUCCESSFUL BIDDER WILL INCLUDE A CONSIDERATION OF COST AND EVALUATION OF WHETHER THE BIDDER HAS CONSCIENTIOUSLY ATTEMPTED TO USE MBE AND WBE FIRMS. A REQUIREMENT OF THE CONTRACT AGREEMENT IS THAT A GENUINE CONCERTED EFFORT WILL BE MADE TO UTILIZE MBE AND WBE WHEREVER POSSIBLE. ATTACHED HEREWITH IS THE COMPLETED EQUAL OPPORTUNITY REPORT STATEMENT.

THE UNDERSIGNED FURTHER AGREES THAT IN CASE OF FAILURE ON HIS PART TO EXECUTE THE SAID AGREEMENT WITHIN THE TEN CONSECUTIVE CALENDAR DAYS AFTER WRITTEN NOTICE BEING GIVEN ON THE AWARD OF THE CONTRACT, THE MONIES PAYABLE BY THE SECURITIES ACCOMPANYING THIS BID SHALL BE PAID TO THE CITY OF LYNCHBURG, VIRGINIA AS LIQUIDATED DAMAGES FOR SUCH FAILURE; OTHERWISE, THE SECURITIES ACCOMPANYING THIS BID SHALL BE RETURNED TO THE UNDERSIGNED.

ATTACHED HEREWITH IS A CERTIFIED ANTI-COLLUSION STATEMENT. FAILURE TO SIGN AND NOTARIZE THIS STATEMENT MAY RESULT IN REJECTION OF THE BID.

ATTACHED HEREWITH IS A COMPLETED QUALIFICATIONS REPORT WHICH INCLUDES THE INFORMATION REQUESTED FOR THE PAST FIVE (5) YEARS.

THIS BID IS SUBJECT TO ACCEPTANCE WITHIN A PERIOD OF 90 DAYS FROM THIS DATE.

RESPECTFULLY SUBMITTED,

		CONTRACTOR
		ВУ
		1
		ADDRESS
DATE		TELEPHONE NUMBER
CONTRACTOR'S CURRENT VIRGINIA LICENSE NUMBER	CODE	E

IF DETERMINED TO BE THE SUCCESSFUL LOW BIDDER(S), THE ABOVE SIGNED ELECTS TO USE THE ESCROW ACCOUNT PROCEDURE, A COPY OF WHICH IS ATTACHED TO THIS BID PROPOSAL PACKAGE.

WRITE "YES" OR "NO" ON ABOVE LINE.

THE CITY RESERVES THE RIGHT NOT TO WITHHOLD RETAINAGE.

IN THE EVENT THE SUCCESSFUL BIDDER ELECTS TO USE THE ESCROW ACCOUNT PROCEDURE, THE "ESCROW AGREEMENT" FORM SHALL BE EXECUTED AND SUBMITTED TO THE CITY OF LYNCHBURG ENGINEERING DIVISION WITHIN FIFTEEN (15) CALENDAR DAYS AFTER NOTIFICATION. IF THE "ESCROW AGREEMENT" FORM IS NOT SUBMITTED WITHIN THE FIFTEEN-DAY PERIOD, THE CONTRACTOR SHALL FORFEIT HIS RIGHTS TO THE USE OF THE ESCROW ACCOUNT PROCEDURE.

EQUAL OPPORTUNITY REPORT STATEMENT

THE BIDDER SHALL COMPLETE THE FOLLOWING STATEMENT BY CHECKING THE APPROPRIATE BLANK AS FOLLOWS. HAS NOT THE BIDDER HAS PARTICIPATED IN A PREVIOUS CONTRACT SUBJECT TO THE NON-DISCRIMINATION CLAUSE PRESCRIBED BY EXECUTIVE ORDER 10925, DATED MARCH 6, 1961, OR EXECUTIVE ORDER 11114 DATED JUNE 22, 1963, AND EXECUTIVE ORDER 11246 DATED SEPTEMBER 24, 1965. IN CONJUNCTION WITH THE CITY OF LYNCHBURG'S POLICY TO UTILIZE MINORITY AND WOMEN OWNED BUSINESSES WHEREVER POSSIBLE, THE BIDDER HAS SOLICITED QUOTATIONS FOR LABOR, MATERIAL, AND/OR SERVICES FROM THE FOLLOWING: NAME OF FIRM CONTACT NAME AND PHONE NUMBER DATE OF THOSE LISTED ABOVE, WE INTEND, AT THIS TIME, TO UTILIZE THE FOLLOWING IN THE COMPLETION OF THE WORK REQUIRED BY THIS CONTRACT: SERVICE/WORK TO BE PERFORMED ESTIMATED VALUE NAME OF FIRM "THIS FIRM ASSURES THAT IT WILL GIVE ITS BEST EFFORTS TO UTILIZE MBE AND WBE BUSINESS ENTERPRISES WHEREVER POSSIBLE THROUGHOUT THE TERM OF THIS CONTRACT." CERTIFIED BY: (SIGNATURE) (TYPED/PRINTED NAME & TITLE) COMPANY NAME: (FIRM NAME) IRS NUMBER: (FIRM TAXPAYER ID) FAILURE TO DOCUMENT AND REPORT MBE/WBE FIRM CONTACTS ON THIS FORM MAY BE A

BASIS FOR REJECTION OF THE BID AS NONCONFORMING.

CERTIFICATION OF NONDISCRIMINATION AND ANTI-COLLUSION

BY SUBMITTING THEIR BIDS, ALL BIDDERS CERTIFY TO THE CITY OF LYNCHBURG, VA THAT THEY WILL CONFORM TO THE PROVISIONS OF THE FEDERAL CIVIL RIGHTS ACT OF 1964, AS AMENDED, AS WELL AS THE VIRGINIA FAIR EMPLOYMENT CONTRACTING ACT OF 1975, AS AMENDED, WHERE APPLICABLE, THE VIRGINIAN'S WITH DISABILITIES ACT, THE AMERICANS WITH DISABILITIES ACT, SECTION 2.2-4311 OF THE VIRGINIA PUBLIC PROCUREMENT ACT, AND THE LYNCHBURG PROCUREMENT ORDINANCE:

IN EVERY CONTRACT OVER \$10,000, THE PROVISIONS BELOW APPLY:

- 1. DURING THE PERFORMANCE OF THIS CONTRACT, THE CONTRACTOR AGREES AS FOLLOWS:
 - A. THE CONTRACTOR WILL NOT DISCRIMINATE AGAINST ANY EMPLOYEE OR APPLICANT FOR EMPLOYMENT BECAUSE OF RACE, RELIGION, COLOR, SEX, NATIONAL ORIGIN, AGE, DISABILITY, OR OTHER BASIS PROHIBITED BY STATE LAW RELATING TO DISCRIMINATION IN EMPLOYMENT, EXCEPT WHERE THERE IS A BONA FIDE OCCUPATIONAL QUALIFICATION REASONABLY NECESSARY TO THE NORMAL OPERATION OF THE CONTRACTOR. THE CONTRACTOR AGREES TO POST IN CONSPICUOUS PLACES, AVAILABLE TO EMPLOYEES AND APPLICANTS FOR EMPLOYMENT, NOTICES SETTING FORTH THE PROVISIONS OF THIS NONDISCRIMINATION CLAUSE.
 - B. THE CONTRACTOR, IN ALL SOLICITATIONS OR ADVERTISEMENTS FOR EMPLOYEES PLACED BY OR ON BEHALF OF THE CONTRACTOR, WILL STATE THAT SUCH CONTRACTOR IS AN EQUAL OPPORTUNITY EMPLOYER.
 - C. NOTICES, ADVERTISEMENTS AND SOLICITATIONS PLACED IN ACCORDANCE WITH FEDERAL LAW, RULE OR REGULATION SHALL BE DEEMED SUFFICIENT FOR THE PURPOSE OF MEETING THE REQUIREMENTS OF THIS SECTION.
- 2. THE CONTRACTOR WILL INCLUDE THE PROVISIONS OF THE FOREGOING PARAGRAPHS A, B, AND C IN EVERY SUBCONTRACT OR PURCHASE ORDER OF OVER \$10,000, SO THAT THE PROVISIONS WILL BE BINDING UPON EACH SUBCONTRACTOR OR VENDOR.

I ALSO HEREBY CERTIFY THAT THIS BID IS NOT THE RESULT OF, OR AFFECTED BY, ANY ACT OF COLLUSION WITH ANOTHER PERSON ENGAGED IN THE SAME LINE OF BUSINESS, OR ANY ACT OF FRAUD PUNISHABLE UNDER THE VIRGINIA COMMONWEALTH FRAUDS ACT.

CERTIFIED BY:	(CORPORATE SEAL)
DATE:	
	(SEAL)
ACKNOWLEDGED BEFORE ME THIS	DAY OF
	NOTARY PUBLIC
MY COMMISSION EXPIRES:	

QUALIFICATIONS

THE BIDDER SHALL STATE HERE WHAT PREVIOUS MUNICIPAL TYPE WORK HE HAS PERFORMED SIMILAR TO THAT CONTEMPLATED IN THIS CONTRACT, AND GIVE REFERENCES THAT WILL AFFORD THE CITY OF LYNCHBURG AN OPPORTUNITY TO JUDGE HIS EXPERIENCE AND SKILL. LIST FIVE (5) PROJECTS OF SIMILAR SIZE AND DOLLAR VALUE COMPLETED WITHIN THE LAST FIVE (5) YEARS.

SUBMITTAL OF THIS INFORMATION ON OTHER STANDARD FORMS CONTAINING ALL THE INFORMATION NOTED BELOW ARE ACCEPTABLE.

FAILURE TO PROVIDE SATISFACTORY EVIDENCE OF EXPERIENCE MAY CAUSE THE BID TO BE REJECTED. DOLLAR YEAR OWNER/ PHONE CONTACT TYPE OF LOCATION VALUE COMPLETED ENGINEER NO. PERSON WORK DONE

CITY OF LYNCHBURG ESCROW AGREEMENT

	THIS	AGREEMENT	, MADE ANI) ENTERED	INTO	THIS	DAY	OF	,
2004	BY,	BETWEE	N AND	AMONG	THE	CITY	OF	LYNCHBURG	("CITY"),
(CONT	RACTO	R),							
				(NAME	OF B	ANK)			
	***************************************			(ADDRE:	SS OF	BANK)			
LOCAT	ED IN	MPANY, BAN THE COMMO LY AS "BAN PROVIDES:	NWEALTH (TH ITS PRING	CIPAL OFFICE
					I.				
		ITY AND TH	E CONTRAC	TOR HAVE	ENTE	RED INTO	O A CON	TRACT WITH	RESPECT TO
MODIF ESCRO	IES,	THE CONTRA ALL NOT B	ACT. PAYI	MENTS MAI	DE HE	REUNDER	OR THE	IN NO WAY RELEASE OF DF PERFORMA	FUNDS FROM

II.

IN ORDER TO ASSURE FULL AND SATISFACTORY PERFORMANCE BY THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT, THE CITY'S DIRECTOR OF FINANCE IS REQUIRED THEREBY TO RETAIN CERTAIN AMOUNTS OTHERWISE DUE THE CONTRACTOR. THE CONTRACTOR HAS, WITH THE APPROVAL OF THE CITY, ELECTED TO HAVE THESE RETAINED AMOUNTS HELD IN ESCROW BY THE BANK. THIS AGREEMENT SETS FORTH THE TERMS OF THE ESCROW. THE BANK SHALL NOT BE DEEMED A PARTY TO, BOUND BY, OR REQUIRED TO INQUIRE INTO THE TERMS OF, THE CONTRACT OR ANY OTHER INSTRUMENT OR AGREEMENT BETWEEN THE CITY AND THE CONTRACTOR.

III.

THE CITY SHALL FROM TIME TO TIME PURSUANT TO ITS CONTRACT PAY TO THE BANK AMOUNTS RETAINED BY IT UNDER THE CONTRACT. EXCEPT AS TO AMOUNTS ACTUALLY WITHDRAWN FROM ESCROW BY THE CITY, THE CONTRACTOR SHALL LOOK SOLELY TO THE BANK FOR THE PAYMENT OF FUNDS RETAINED UNDER THE CONTRACT AND PAID BY THE CITY TO THE BANK.

THE RISK OF LOSS BY DIMINUTION OF THE PRINCIPAL OF ANY FUNDS INVESTED UNDER THE TERMS OF THIS CONTRACT SHALL BE SOLELY UPON THE CONTRACTOR.

FUNDS AND SECURITIES HELD BY THE BANK PURSUANT TO THIS ESCROW AGREEMENT SHALL NOT BE SUBJECT TO LEVY, GARNISHMENT, ATTACHMENT, LIEN, OR OTHER PROCESS WHATSOEVER. CONTRACTOR AGREES NOT TO ASSIGN, PLEDGE, DISCOUNT, SELL OR OTHERWISE

TRANSFER OR DISPOSE OF HIS INTEREST IN THE ESCROW ACCOUNT OR ANY PART THEREOF, EXCEPT TO THE SURETY.

IV.

UPON RECEIPT OF CHECKS OR WARRANTS DRAWN BY THE DIRECTOR OF FINANCE AND MADE PAYABLE TO IT AS ESCROW AGENT, THE BANK SHALL PROMPTLY NOTIFY THE CONTRACTOR, NEGOTIATE THE SAME AND DEPOSIT OR INVEST AND REINVEST THE PROCEEDS IN APPROVED SECURITIES IN ACCORDANCE WITH THE WRITTEN INSTRUCTION OF THE CONTRACTOR. IN NO EVENT SHALL THE BANK INVEST THE ESCROWED FUNDS IN ANY SECURITY NOT APPROVED.

v.

THE FOLLOWING SECURITIES, AND NONE OTHER, ARE APPROVED SECURITIES FOR ALL PURPOSES OF THIS AGREEMENT:

- (1) UNITED STATES TREASURY BONDS, UNITED STATES TREASURY NOTES, UNITED STATES TREASURY CERTIFICATES OF INDEBTEDNESS OR UNITED STATES TREASURY BILLS,
- (2) BONDS, NOTES AND OTHER EVIDENCES OF INDEBTEDNESS UNCONDITIONALLY GUARANTEED AS TO THE PAYMENT OF PRINCIPAL AND INTEREST BY THE UNITED STATES,
- (3) BONDS OR NOTES OF THE CITY,
- (4) BONDS OF THE COMMONWEALTH OF VIRGINIA OR ANY POLITICAL SUBDIVISION THEREOF, IF SUCH BONDS CARRIED, AT THE TIME OF PURCHASE BY THE BANK OR DEPOSIT BY THE CONTRACTOR, A STANDARD AND POOR'S OR MOODY'S INVESTORS SERVICE RATING OF AT LEAST "A", AND
- (5) CERTIFICATES OF DEPOSIT ISSUED BY COMMERCIAL BANKS LOCATED WITHIN THE COMMONWEALTH, INCLUDING, BUT NOT LIMITED TO, THOSE INSURED BY THE BANK AND ITS AFFILIATES,
- (6) ANY BONDS, NOTES, OR OTHER EVIDENCES OF INDEBTEDNESS LISTED IN SECTION (1) THROUGH (3) MAY BE PURCHASED PURSUANT TO A REPURCHASE AGREEMENT WITH A BANK, WITHIN OR WITHOUT THE CITY HAVING A COMBINED CAPITAL, SURPLUS AND UNDIVIDED PROFIT OF NOT LESS THAN \$25,000,000, PROVIDED THE OBLIGATION OF THE BANK TO REPURCHASE IS WITHIN THE TIME LIMITATIONS ESTABLISHED FOR INVESTMENTS AS SET FORTH HEREIN. THE REPURCHASE AGREEMENT SHALL BE CONSIDERED A PURCHASE OF SUCH SECURITIES EVEN IF TITLE, AND/OR POSSESSION OF SUCH SECURITIES IS NOT TRANSFERRED TO THE ESCROW AGENT, SO LONG AS THE REPURCHASE OBLIGATION OF THE BANK IS COLLATERIZED BY THE SECURITIES THEMSELVES, AND THE SECURITIES HAVE ON THE DATE OF THE REPURCHASE AGREEMENT A FAIR MARKET VALUE EQUAL TO AT LEAST 100 PERCENT OF THE AMOUNT OF THE REPURCHASE OBLIGATION OF THE BANK, AND THE SECURITIES ARE HELD BY A THIRD PARTY, AND SEGREGATED FROM OTHER SECURITIES OWNED BY THE BANK.

NO SECURITY IS APPROVED HEREUNDER WHICH MATURES MORE THAN FIVE YEARS AFTER THE DATE OF ITS PURCHASE BY THE BANK OR DEPOSIT BY THE CONTRACTOR.

VI.

THE CONTRACTOR MAY FROM TIME TO TIME WITHDRAW THE WHOLE OR ANY PORTION OF THE ESCROWED FUNDS BY DEPOSITING WITH THE BANK APPROVED SECURITIES IN AN AMOUNT EQUAL TO, OR IN EXCESS OF, THE AMOUNT SO WITHDRAWN. ANY SECURITIES SO DEPOSITED OR WITHDRAWN SHALL BE VALUED AT SUCH TIME OF DEPOSIT OR WITHDRAWAL AT THE LOWER OF PAR OR MARKET VALUE, THE LATTER AS DETERMINED BY THE BANK. ANY SECURITIES SO DEPOSITED SHALL THEREUPON BECOME A PART OF THE ESCROWED FUND.

UPON RECEIPT OF A DIRECTION SIGNED BY THE CITY'S DIRECTOR OF PUBLIC WORKS OR CITY ENGINEER, THE DIRECTOR OF FINANCE OR CITY ACCOUNTANT SHALL AUTHORIZE THE BANK TO PAY THE PRINCIPAL OF THE FUND, OR ANY SPECIFIED AMOUNT THEREOF, TO THE ACCOUNT OF THE CITY OF LYNCHBURG. SUCH PAYMENT SHALL BE MADE IN CASH AS SOON AS IS PRACTICABLE AFTER RECEIPT OF THE DIRECTION.

UPON RECEIPT OF A DIRECTION SIGNED BY THE DIRECTOR OF PUBLIC WORKS OR THE CITY ENGINEER, THE DIRECTOR OF FINANCE OR CITY ACCOUNTANT SHALL AUTHORIZE THE BANK TO PAY AND DELIVER THE PRINCIPAL OF THE FUND, OR ANY SPECIFIED AMOUNT THEREOF, TO THE CONTRACTOR, IN CASH OR IN KIND, AS MAY BE SPECIFIED BY THE CONTRACTOR. SUCH PAYMENT AND DELIVERY SHALL BE MADE AS SOON AS IS PRACTICABLE AFTER RECEIPT OF THE DIRECTION.

VII.

FOR ITS SERVICES HEREUNDER THE BANK SHALL BE ENTITLED TO A REASONABLE FEE IN ACCORDANCE WITH ITS PUBLISHED SCHEDULE OF FEES OR AS MAY BE AGREED UPON BY THE BANK AND THE CONTRACTOR. SUCH FEE AND ANY OTHER COSTS OF ADMINISTRATION OF THIS AGREEMENT SHALL BE PAID FROM THE INCOME EARNED UPON THE ESCROWED FUND AND, IF SUCH INCOME IS NOT SUFFICIENT TO PAY THE SAME, BY THE CONTRACTOR.

VIII.

THE NET INCOME EARNED AND RECEIVED UPON THE PRINCIPAL OF THE ESCROWED FUND SHALL BE PAID OVER TO THE CONTRACTOR IN QUARTERLY OR MORE FREQUENT INSTALLMENTS. UNTIL SO PAID OR APPLIED TO PAY THE BANK'S FEE OR ANY OTHER COSTS OF ADMINISTRATION SUCH INCOME SHALL BE DEEMED A PART OF THE PRINCIPAL OF THE FUND.

IX.

THE SURETY UNDERTAKES NO OBLIGATION HEREBY BUT JOINS IN THIS AGREEMENT FOR THE SOLE PURPOSE OF ACKNOWLEDGING THAT ITS OBLIGATIONS AS SURETY FOR THE CONTRACTOR'S PERFORMANCE OF THE CONTRACT ARE NOT AFFECTED HEREBY.

WITNESS THE FOLLOWING SIGNATURES, ALL AS OF THE DAY AND YEAR FIRST ABOVE WRITTEN.

CITY OF LYNCHBURG

BY:		
	CITY MANAGER	
	CONTRACTOR	
	CONTRACTOR	
BY:		
	OFFICER, PARTNER OR OWNER	(SEAL)
	אל אדע	
	BANK	
BY:		
	TITLE:	
	SURETY	
BY:	<u> </u>	
	ATTORNEY-IN-FACT	(SEAL)

CONSTRUCTION AGREEMENT OR CONTRACT

THIS AGREEMENT MADE AND ENTERED INTO ON THE, 2004, BY AND BETWEEN, PARTY OF THE FIRST PART, HEREINAFTER REFERRED TO AS CONTRACTOR, AND THE CITY OF LYNCHBURG, A MUNICIPAL CORPORATION OF THE COMMONWEALTH OF VIRGINIA, PARTY OF THE SECOND PART, HEREINAFTER REFERRED TO AS THE OWNER.
WITNESSETH: THAT THE CONTRACTOR, FOR THE CONSIDERATION HEREINAFTER FULLY SET OUT, HEREBY AGREES WITH THE OWNER AS FOLLOWS:
1. THAT THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT, AND PERFORM ALL WORK IN MANNER AND FORM AS CONTAINED IN THE PROJECT MANUAL AND DRAWINGS, DATED APRIL 30, 2003, FOR REPLACEMENT OF PIGEON CREEK INTERCEPTOR - PHASE II-B AND ALL OTHER SPECIFICATIONS AS REFERENCED IN THESE DOCUMENTS.
THAT THE CONTRACTOR SHALL COMMENCE WORK WITHIN TEN (10) DAYS AFTER AWARD OF THE CONTRACT AND NOTICE TO PROCEED WITH THE WORK UNDER CONTRACT, AND SHALL COMPLETE THE WORK WITHIN 270 CALENDAR DAYS AFTER RECEIPT OF THE NOTICE TO PROCEED FOR THE PROJECT. OWNER AND CONTRACTOR RECOGNIZE THAT TIME IS OF THE ESSENCE OF THIS AGREEMENT AND THAT OWNER WILL SUFFER FINANCIAL LOSS IF THE WORK IS NOT COMPLETED WITHIN THE TIMES SPECIFIED IN THE NOTICE TO PROCEED, PLUS ANY EXTENSIONS THEREOF ALLOWED IN ACCORDANCE WITH ARTICLE 12 OF THE GENERAL CONDITIONS. THEY ALSO RECOGNIZE THE DELAYS, EXPENSE AND DIFFICULTIES INVOLVED IN PROVING THE ACTUAL LOSS SUFFERED BY OWNER IF THE WORK IS NOT COMPLETED ON TIME. ACCORDINGLY, INSTEAD OF REQUIRING ANY SUCH PROOF, OWNER AND CONTRACTOR AGREE THAT AS LIQUIDATED DAMAGES FOR DELAY (BUT NOT AS A PENALTY) CONTRACTOR SHALL PAY OWNER TWO HUNDRED AND SEVENTY FIVE DOLLARS (\$275.00) FOR EACH DAY THAT EXPIRES AFTER THE TIME SPECIFIED FOR COMPLETION. IF THE CONTRACTOR IS SUBJECT TO LIQUIDATED DAMAGES, THE OWNER HAS THE RIGHT TO WITHHOLD THE LIQUIDATED DAMAGES FROM THE CONTRACTOR'S REGULAR PAYMENTS OR RETAINAGE.
3. THE OWNER HEREBY AGREES TO PAY THE CONTRACTOR FOR THE FAITHFUL PERFORMANCE OF THIS AGREEMENT SUBJECT TO ADDITIONS AND DEDUCTIONS AS PROVIDED IN THE SPECIFICATIONS OR PROPOSAL, IN LAWFUL MONEY OF THE UNITED STATES, AS FOLLOWS:
THE LUMP SUM OF
DOLLARS \$

- 4. THE OWNER SHALL MAKE PARTIAL PAYMENTS TO THE CONTRACTOR ON THE LAST BUSINESS DAY OF THE MONTH BY CHECK VIA FIRST CLASS MAIL THROUGH THE U. S. POSTAL SERVICE FOR A DULY CERTIFIED AND APPROVED ESTIMATE OF WORK PERFORMED DURING THE PRECEDING CALENDAR MONTH BY THE CONTRACTOR, LESS FIVE PERCENT (5%) OF THE AMOUNT OF SUCH ESTIMATE WHICH IS TO BE RETAINED BY THE OWNER UNTIL ALL WORK HAS BEEN PERFORMED STRICTLY IN ACCORDANCE WITH THIS AGREEMENT AND UNTIL SUCH WORK HAS BEEN ACCEPTED BY THE OWNER.
- 5. UPON SUBMISSION BY THE CONTRACTOR OF EVIDENCE SATISFACTORY TO THE OWNER THAT ALL PAYROLLS, MATERIAL BILLS AND OTHER COSTS INCURRED BY THE CONTRACTOR IN CONNECTION WITH THE CONSTRUCTION OF THE WORK HAVE BEEN PAID IN FULL, FINAL PAYMENT ON ACCOUNT OF THIS AGREEMENT SHALL BE MADE WITHIN 90 DAYS AFTER THE COMPLETION BY THE CONTRACTOR OF ALL WORK COVERED BY THIS AGREEMENT AND THE ACCEPTANCE OF SUCH WORK BY THE OWNER.

- 6. IT IS FURTHER MUTUALLY AGREED BETWEEN THE PARTIES HERETO THAT IF, AT ANY TIME AFTER THE EXECUTION OF THIS AGREEMENT AND SURETY BOND HERETO ATTACHED FOR ITS FAITHFUL PERFORMANCE, THE OWNER SHALL DEEM THE SURETY OR SURETIES UPON SUCH BOND TO BE UNSATISFACTORY, OR IF FOR ANY REASON, SUCH BOND CEASES TO BE ADEQUATE TO COVER THE PERFORMANCE OF THE WORK, THE CONTRACTOR SHALL AT ITS EXPENSE, WITHIN FIVE (5) DAYS AFTER THE RECEIPT OF NOTICE FROM THE OWNER SO TO DO, FURNISH AN ADDITIONAL BOND OR BONDS IN SUCH FORM AND AMOUNT, AND SUCH WITH SURETY OR SURETIES AS SHALL BE SATISFACTORY TO THE OWNER. IN SUCH EVENT NO FURTHER PAYMENT TO THE CONTRACTOR SHALL BE DEEMED TO BE DUE UNDER THIS AGREEMENT UNTIL SUCH NEW OR ADDITIONAL SECURITY FOR THE FAITHFUL PERFORMANCE OF THE WORK SHALL BE FURNISHED IN MANNER AND FORM SATISFACTORY TO THE OWNER.
- 7. CONTRACTOR AGREES TO FULFILL ALL REQUIREMENTS OF STATE, FEDERAL, AND MUNICIPAL LAWS WHICH MAY BE APPLICABLE TO THIS PROJECT.

THIS AGREEMENT IS EXECUTED IN FOUR COUNTERPARTS, EACH OF WHICH SHALL, WITHOUT PROOF OR ACCOUNTING FOR THE OTHER COUNTERPARTS, BE DEEMED AN ORIGINAL CONTRACT.

FROOF OR ACCOUNTING FOR THE OTHE	A COUNTERPARTS, BE DEEMED AN ORIGINAL CONTRACT.
IN WITNESS WHEREOF,	HAS CAUSED ITS NAME TO
BE SUBSCRIBED TO THIS AGREEMENT	BY , ITS
	, AND ITS CORPORATE SEAL TO BE , ITS , IZED THEREFORE; AND THE CITY OF LYNCHBURG HAS SUBSCRIBED BY L. KIMBALL PAYNE, III, ITS CITY
MANAGER, AND ITS CORPORATE SEAL	TO BE HEREUNTO AFFIXED AND ATTESTED BY PATRICIA SAID OFFICERS BEING DULY AUTHORIZED THEREFORE,
	(CONTRACTOR)
	BY:
(CEAL)	
(SEAL)	
ATTEST:	
	CITY OF LYNCHBURG
(SEAL)	BY:
	CITY MANAGER
ATTEST:	
CLERK OF COUNCIL	
APPROVED:	APPROVED:
CITY ENGINEER	CITY ATTORNEY
CSO PROGRAM MANAGER	

AIA Document A305 - Electronic Format

Contractor's Qualification Statement

1986 EDITION

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES: CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

This form is approved and recommended by The American Institute of Architects (AIA) and The Associated General Contractors of American (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

Copyright 1964, 1969, 1979, © 1986 by The American Institute of Architects, 1735 New York Avenue N.W, Washington D.C. 20006-5292. Reproduction of the material herein or substantial quotation of its provisions without written permission of the AIA violates the copyright laws of the United States and will be subject to legal prosecution.

The Undersign	ned certifies under oath that the information prov	ided herein is true and sufficiently com	aplete so as not to be misleading.
SUBMITTE	D TO:		
ADDRESS:			
SUBMITTE	D BY:	Corporation	
NAME:		Partnership	
ADDRESS:		Individual	
PRINCIPAL	OFFICE:	Joint Venture	
		Other	
NAME OF PR	ROJECT (if applicable):		
TYPE OF WO	ORK (file separate form for each Classification of V	Vork):	
Ger	neral Construction	HVAC	
Plu	mbing	Electrical	
Oth	ner (please specify)		
1. ORGAN	NIZATION		
1.1 How	many years has your organization been in busines	s as a Contractor?	
1.2 How	many years has your organization been in busines	s under its present business name?	
1.2.1	Under what other or former names has your o	rganization operated?	
1.3 If you	ur organization is a corporation, answer the follow	ing:	
1.3.1			
1.3.2			
1.3.3	President's name:		
1.3.4	Vice-president's name(s)		
1.3.5	Secretary's name:		
1.3.6			
,			

© 1986 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT A305 - CONTRACTOR'S QUALIFICATION STATEMENT - 1986 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and is subject to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: a305mast.aia -- 1/2/2003. AIA License Number 1209681, which expires on 10/18/2003.

- 1.4 If your organization is a partnership, answer the following:
 - 1.4.1 Date of organization:
 - **1.4.2** Type of partnership (if applicable):
 - 1.4.3 Name(s) of general partner(s)
- 1.5 If your organization is individually owned, answer the following:
 - 1.5.1 Date of organization:
 - 1.5.2 Name of owner:
- 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

- 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.
- 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

3. EXPERIENCE

- 3.1 List the categories of work that your organization normally performs with its own forces.
- 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)
 - 3.2.1 Has your organization ever failed to complete any work awarded to it?
 - 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?
 - 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?
- 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)
- 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.
 - 3.4.1 State total worth of work in progress and under contract:
- 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.
 - 3.5.1 State average annual amount of construction work performed during the past five years:
- 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

4. REFERENCES

© 1986 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT A305 - CONTRACTOR'S QUALIFICATION STATEMENT - 1986 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and is subject to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: a305mast.aia -- 1/2/2003. AIA License Number 1209681, which expires on 10/18/2003.

- 4.1 Trade References:
- 4.2 Bank References:
- 4.3 Surety:
 - **4.3.1** Name of bonding company:
 - **4.3.2** Name and address of agent:

5. FINANCING

- 5.1 Financial Statement.
 - 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

- 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:
- 5.1.3 Is the attached financial statement for the identical organization named on page one?
- **5.1.4** If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).
- 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

6. SIGNATURE

6.1 Dated at this day of .

Name of Organization:

By:

Title:

6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

^{© 1986} THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT A305 - CONTRACTOR'S QUALIFICATION STATEMENT - 1986 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and is subject to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: a305mast.aia -- 1/2/2003. AIA License Number 1209681, which expires on 10/18/2003.

Subscribed and sworn before me this day of 20 Notary Public:

My Commission Expires:

^{© 1986} THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT A305 - CONTRACTOR'S QUALIFICATION STATEMENT - 1986 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and is subject to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: a305mast.aia -- 1/2/2003. AIA License Number 1209681, which expires on 10/18/2003.

CONTRACT BOND

KNOW ALL MEN BY THESE PRESENT: THAT WE	
(HEREINAFTER CALLED THE PRINCIPAL) AND	
(HEREINAFTER CALLED THE SURETY) ARE HELD AND FIRMLY BOND UNTO THE	CITY OF
LYNCHBURG, A MUNICIPAL CORPORATION OF THE COMMONWEALTH OF VIRGINIA (HER)	EINAFTER
CALLED THE OWNER) IN THE PENAL SUM OF	
	FOR THE
PAYMENT OF WHICH WE BIND OURSELVES, OUR HEIRS, EXECUTORS, ADMINIST	'RATORS,
SUCCESSORS, AND ASSIGNS FOR THE FAITHFUL PERFORMANCE OF A CERTAIN	WRITTEN
CONTRACT, DATED THE DAY OF , 200 , ENTERED INTO BETW	EEN THE
PRINCIPAL AND CITY OF LYNCHBURG, FOR	

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT IF THE PRINCIPAL SHALL FAITHFULLY PERFORM THE TERMS AND CONDITIONS OF THE CONTRACT IN ALL RESPECTS ON HIS OR ITS PART AND SHALL FULLY PAY ALL OBLIGATIONS INCURRED IN CONNECTION WITH THE PERFORMANCE OF SUCH CONTRACT ON ACCOUNT OF LABOR AND MATERIALS USED IN CONNECTION THEREWITH AND ALL SUCH OBLIGATIONS OF EVERY FORM, NATURE, AND CHARACTER, AND SHALL SAVE HARMLESS THE OWNER FROM ANY AND ALL LIABILITY OF EVERY NATURE, KIND, AND CHARACTER WHICH MAY BE INCURRED IN CONNECTION WITH THE PERFORMANCE OF FULFILLMENT OF SUCH CONTRACT ON THE PART OF THE PRINCIPAL OR OTHER SUCH LIABILITY RESULTING FROM NEGLIGENCE OR OTHERWISE ON THE PART OF THE PRINCIPAL, AND FURTHER SHALL SAVE HARMLESS THE OWNER FROM ALL COSTS AND DAMAGE WHICH MAY BE SUFFERED BY REASON OF THE FAILURE OF THE PRINCIPAL TO FULLY AND COMPLETELY PERFORM SAID CONTRACT, AND SHALL FULLY REIMBURSE AND REPAY THE OWNER FOR ALL EXPENDITURES OF EVERY KIND, CHARACTER, AND DESCRIPTION WHICH MAY BE INCURRED BY THE OWNER IN CONNECTION WITH MAKING GOOD ANY AND EVERY DEFAULT WHICH MAY EXIST ON THE PART OF THE PRINCIPAL IN CONNECTION WITH THE PERFORMANCE OF SAID CONTRACT; AND FURTHER THAT IF THE PRINCIPAL SHALL PAY ALL LAWFUL CLAIMS OF ALL PERSONS, FIRMS, PARTNERSHIPS, OR CORPORATIONS FOR LABOR PERFORMED AND MATERIALS FURNISHED IN CONNECTION WITH THE PERFORMANCE OF THE CONTRACT (WE AGREEING THAT FAILURE SO TO DO SHALL GIVE SUCH PERSONS, FIRMS, PARTNERSHIPS, OR CORPORATIONS A DIRECT RIGHT OF ACTION AGAINST EITHER THE PRINCIPAL OR SURETY UNDER THIS OBLIGATION, OR BOTH SAID PRINCIPAL AND SURETY), THEN THIS OBLIGATION SHALL BE VOID, OTHERWISE THE SAME SHALL REMAIN IN FULL FORCE AND EFFECT; IT BEING EXPRESSLY UNDERSTOOD AND AGREED THAT THE LIABILITY OF THE SURETY FOR ANY AND ALL CLAIMS HEREUNDER SHALL IN NO EVENT EXCEED THE PENAL AMOUNT OF THIS OBLIGATION AS HEREIN STATED;

PROVIDED HOWEVER, THAT THIS BOND IS ISSUED SUBJECT TO THE FOLLOWING CONDITIONS AND PRIVILEGES:

- (1) THAT NO SUIT, ACTION, OR PROCEEDING BY REASON OF ANY DEFAULT WHATEVER ON THE PART OF THE PRINCIPAL SHALL BE BROUGHT ON THIS BOND AFTER ONE YEAR FROM THE DATE ON WHICH FINAL PAYMENT ON THE CONTRACT FALLS DUE;
- (2) THAT ANY ALTERATIONS OR ADDITIONS WHICH MAY BE MADE UNDER THE CONTRACT OR THE WORK TO BE DONE UNDER IT OR THE GIVING BY THE OWNER OF ANY EXTENSION OF TIME FOR THE PERFORMANCE OF THE CONTRACT, OR ANY OTHER FORBEARANCE ON THE PART OF EITHER THE OWNER OR THE PRINCIPAL SHALL NOT IN ANY WAY RELEASE THE PRINCIPAL AND SURETY, OR EITHER OF THEM, THEIR HEIRS, EXECUTORS, ADMINISTRATOR, SUCCESSORS OR ASSIGNS, FROM THEIR LIABILITY HEREUNDER, NOTICE TO THE SURETY OF ANY SUCH ALTERATIONS, EXTENSIONS, OR FORBEARANCES BEING EXPRESSLY WAIVED.

EXECUTED IN FOUR COUNTERPARTS.

CITY ATTORNEY

IN WITNESS WHEREOF,	, THE PRINCIPAL, HAS
CAUSED ITS NAME TO BE HEREUNTO SUBSCRIBED AFFIXED AND DULY ATTESTED BY ITS PROPER O	O AND ITS CORPORATE SEAL TO BE HEREUNTO
DAY OF , 200 , AND THE SU	RETY HAS CAUSED ITS NAME TO BE HEREUNTO
SUBSCRIBED AND ITS SEAL AFFIXED BY ITS A	UTHORIZED ATTORNEY-IN-FACT.
	BY:
	PRESIDENT
	(SEAL)
	ATTEST:
	SECRETARY
	SECRETARI
	BY:
	ATTORNEY-IN-FACT
APPROVED AS TO FORM AND LEGALITY	

Supplemental Attachment for acord certificate of insurance 25-S (7/90).

AIA Document G715 - Electronic Format

(This document replaces AIA Document G705, Certificate of Insurance.)

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT DATE.

PRC	JEC:	Γ:			
INS	JRE				
A.	Ger	neral Liability	Yes	No _	N/A
	1.	Does the General Aggregate apply to this Project only?	[]	[]	[]
	2.	Does this policy include coverage for:	. •		
		 a. Premises - Operations? b. Explosion, Collapse and Underground Hazards? c. Personal Injury Coverage? d. Products Coverage? e. Completed Operations? f. Contractual Coverage for the Insured's obligations in A201? 			
	3.	If coverage is written on a claims-made basis, what is the: a. Retroactive Date? b. Extended Reporting Date?			
В.	Wo	orker's Compensation If the Insured is exempt from Worker's Compensation statutes, coverage?	does the Insured carry	the equivalent Volunt	ary Compensation
C.	Fin.	al Payment Information Is this certificate being furnished in connection with the Corequirements of Subparagraphs 9.10.2 and 11.1.3 of AIA Document	ontractor's request for it A201, General Condit	final payment in accions of the Contract for	cordance with the or Construction?
	2.	If so, and if the policy period extends beyond termination of the for this Project continued for the balance of the policy period?	e Contract for Construc	tion, is Completed O	perations coverage []
D.	Ter	mination Provisions Has each policy shown on the certificate and this Supplemen cancellation and/or expiration? List below any policies which do	t been endorsed to pro not contain this notice	ovide the holder with	
	•			[]	[]
Ε.	Otl	ner Provisions			
					•
			A	4	
			Authorized Representa	tive	
			Date of Issue		

© 1991 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT G715 - 1991 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: g715mast.aia -- 1/7/2003. AIA License Number 1209681, which expires on 10/18/2003.

TO OWNIER:	PROJECT:	APPLICATION NO: Distribution to:
FROM CONTRACTOR:	VIA ARCHITECT.	PERIOD TO: CONTRACTOR
		PROJECT NOS:
CONTRACT FOR:		CONTRACT DATE:
CONTRACTOR'S APPLICATION FOR PAYMEN Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.	ON FOR PAYMENT of connection with the Contract.	The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.
	A & & &	CONTRACTOR: By:
a. We I Alin A t.E. So of Completed Work (Column D + E on G703) b. % of Stored Material (Column F on G703) Total Retainage (Lines 5a + 5b or		State of: Subscribed and sworn to before me this day of Notary Public: My Commission expires:
Total in Column I of G703) 6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total) 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) 8. CURRENT PAYMENT DUE 9. BALANCE TO FINISH, INCLUDING RETAINAGE	\$ 0.00 \$ 0.00 \$ \$ 0.00 AGE	ARCHITECT'S CERTIFICATE FOR PAYMENT In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED
(Line 3 less Line 6)		AMOUNT CERTIFIED\$
CHANGE ORDER SUMMARY Total changes approved in previous months by Owner	ADDITIONS DEDUCTIONS	(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and onthe Continuation Sheet that are changed to conform with the amount certified.) ARCHITECT:
Total approved this Month		By:
TOTALS NET CHANGES by Change Order	\$0.00 \$0.00	This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

PAGE ONE OF

AIA DOCUMENT G702

APPLICATION AND CERTIFICATION FOR PAYMENT

AND DOCUMENT G702 - APPLICATION AND CERTIFICATION FOR PAYMENT - 1992 EDITION - AIR - * 1992 EDITION - AIR - * 1992 EDITION - AIR - ENTITION - AIR - CERTIFICATION OF DOCUMENT'S AUTHENTICITY From the Licensee.

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing

Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

_	ď	ن	n n	п	Ţ.	0		H	1
ITEM	DESCRIPT	SCHEDULED	WORK COMPLETED	APLETED -	MATERIALS	TOTAL	%	BALANCE	RETAINAGE
Ö.		VALUE	FROM PREVIOUS APPLICATION	THIS PERIOD	PRESENTLY STORED	COMPLETED AND STORED	(G + C)	TO FINISH (C - G)	(IF VARIABLE RATE)
			(D + E)		(NOT IN D OR E)	TO DATE (D+E+F)			
in gazinasi									
				A Company					
n en									
	GRAND TOTALS	80.00	80.00	\$0.00	\$0.00	00.08 00.08	\$0.00	\$0.00	

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

DBE USAGE STATUS FORM

SECTION I		
CITY PROJECT NO.		DATE
DESCRIPTION		· · · · · · · · · · · · · · · · · · ·
PRIME CONTRACTOR		
DISADVANTAGED SUBCONTRACTORS		AMOUNT
		AMOUNT
SECTION II		
TOTAL PROJECT VALUE	TOTAL THIS APPLICATION	TOTAL TO DATE
TOTAL DISADVANTAGED VALUE	TOTAL THIS APPLICATION	TOTAL TO DATE
SECTION III	TOTAL TO DATE DISADVANTAGED	·
% OF DISADVANTAGED WORK	TOTAL TO DATE PROJECT VALUE	
SECTION IV		
	HAT THE ABOVE FIGURES ARE TRUE ORK USED ON THIS PROJECT.	AND REFLECTIVE OF THE
(SIGNATURE)		(DATE)

202106.96 DB-1

DBE FORM 1 - INCLUDE WITH EVERY MONTHLY PAYMENT REQUEST.

PAYMENT OF DEBTS AND CLAIMS AIA DOCUMENT G706 - ELECTRONIC FORMAT	ARCHITECT CONTRACTOR SURETY OTHER
THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULT COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELEC DOCUMENT D401.	TATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS TRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA
TO OWNER: (Name and address)	ARCHITECT'S PROJECT NO.:
PROJECT: (Name and address)	CONTRACT FOR:
	CONTRACT DATED:
STATE OF: COUNTY OF:	
satisfied for all materials and equipment furnished, for all work,	ment has been made in full and all obligations have otherwise been labor, and services performed, and for all known indebtedness and n connection with the performance of the Contract referenced above responsible or encumbered.
SUPPORTING DOCUMENTS ATTACHED HERETO:	CONTRACTOR: (Name and address)
 SUPPORTING DOCUMENTS ATTACHED HERETO: 1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose. Indicate attachment: yes no 	(Name and address) BY:
1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose.	(Name and address)

© 1994 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292. AIA DOCUMENT G706 - CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS - 1994 EDITION - AIA® - WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced in accordance with your license without violation until the date of expiration as noted below. User Document: g706mast.aia - 1/7/2003. AIA License Number 1209681, which expires on 10/18/2003.

Notary Public:

My Commission Expires:

Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list

3. Contractor's Affidavit of Release of Liens (AIA

thereof.

Document G706A).

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

[INSERT LOGOS]

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE a practice division of the NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General

[seal]

Contractors of America

Construction Specifications Institute

[seal]

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1996 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC User's Guide (No. 1910-50). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1996 Edition).

EJCDC No. 1910-8 (1996 Edition)

Copyright ©1996

National Society of Professional Engineers 1420 King Street, Alexandria, VA 22314

American Consulting Engineers Council 1015 15th Street N.W., Washington, DC 20005

American Society of Civil Engineers 345 East 47th Street, New York, NY 10017

TABLE OF CONTENTS

			<u>1 ago</u>
ARTIC	LE 1 - I	DEFINITIONS AND TERMINOLOGY	00700 - 6
	1.01	Defined Terms	00700 - 6
	1.02	Terminology	00700 - 8
ARTIC	LE 2 - F	RELIMINARY MATTERS	00700 - 9
• •	2.01	Delivery of Bonds	00700 - 9
	2.02	Copies of Documents	00700 - 9
	2.03	Commencement of Contract Times; Notice to Proceed	00700 - 9
	2.04	Starting the Work	00700 - 9
	2.05	Before Starting Construction	00700 - 9
	2.06	Preconstruction Conference	00700 - 10
	2.07	Initial Acceptance of Schedules	00700 - 10
ARTIC	LE 3 - C	CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE	00700 - 10
	3.01	Intent	00700 - 10
	3.02	Reference Standards	00700 - 10
	3.03	Reporting and Resolving Discrepancies	00700 - 11
	3.04	Amending and Supplementing Contract Documents	00700 - 11
	3.05	Reuse of Documents	00700 - 11
ARTIC	LE 4 - A	VAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS;	
RE	FEREN	CE POINTS	
	4.01	Availability of Lands	00700 - 11
	4.02	Subsurface and Physical Conditions	00700 - 12
	4.03	Differing Subsurface or Physical Conditions	00700 - 12
	4.04	Underground Facilities	00700 - 13
	4.05	Reference Points	00700 - 13
	4.06	Hazardous Environmental Condition at Site	00700 - 14
ARTICI	LE 5 - B	ONDS AND INSURANCE	00700 - 15
	5.01	Performance, Payment, and Other Bonds	00700 - 15
	5.02	Licensed Sureties and Insurers	00700 - 15
	5.03	Certificates of Insurance	00700 - 15
	5.04	CONTRACTOR's Liability Insurance	00700 - 15
	5.05	OWNER's Liability Insurance	00700 - 16
	5.06	Property Insurance	00700 - 16
	5.07	Waiver of Rights	00700 - 17
-	5.08	Receipt and Application of Insurance Proceeds	00700 - 18
	5.09	Acceptance of Bonds and Insurance; Option to Replace	00700 - 18
	5.10	Partial Utilization, Acknowledgment of Property Insurer	00700 - 18
ARTICI	LE 6 - C	ONTRACTOR'S RESPONSIBILITIES	00700 - 18
	6.01	Supervision and Superintendence	00700 - 18
	6.02	Labor; Working Hours	00700 - 19
	6.03	Services, Materials, and Equipment	00700 - 19
	6.04	Progress Schedule	00700 - 19
	6.05	Substitutes and "Or-Equals"	00700 - 19
	6.06	Concerning Subcontractors, Suppliers, and Others	00700 - 20
	6.07	Patent Fees and Royalties	
	6.08	Permits	
	6.09	Laws and Regulations	00700 - 22
	6.10	Taxes	
	6.11	Use of Site and Other Areas	- 00700 - 22
	6.12	Record Documents	00700 - 22
	6.13	Safety and Protection	00700 - 22
	6.14	Safety Representative	00700 - 23
	6.15	Hazard Communication Programs	00700 - 23

	6.16	Emergencies	00700 - 23
	6.17	Shop Drawings and Samples	
	6.18	Continuing the Work	
	6.19	CONTRACTOR's General Warranty and Guarantee	
	6.20	Indemnification	
ARTICI	E7-0	THER WORK	
1 1 4	7.01	Related Work at Site	00700 - 26
	7.02	Coordination	
ARTICI	E 8 - O	WNER'S RESPONSIBILITIES	00700 - 26
	8.01	Communications to Contractor	
	8.02	Replacement of ENGINEER	00700 - 26
	8.03	Furnish Data	00700 - 26
	8.04	Pay Promptly When Due	00700 - 26
	8.05	Lands and Easements; Reports and Tests	00700 - 26
	8.06	Insurance	00700 - 27
	8.07	Change Orders	00700 - 27
	8.08	Inspections, Tests, and Approvals	
	8.09	Limitations on OWNER's Responsibilities	
	8.10	Undisclosed Hazardous Environmental Condition	00700 - 27
	8.11	Evidence of Financial Arrangements	
ARTICI		NGINEER'S STATUS DURING CONSTRUCTION	00700 - 27
THEITEL	9.01	OWNER'S Representative	
er er er er er	9.02	Visits to Site	
	9.03	Project Representative	
	9.04		
	9.05	Clarifications and Interpretations	
	9.06		
	9.07	Rejecting Defective Work	
	9.08	Shop Drawings, Change Orders and Payments	
		Determinations for Unit Price Work	00700 - 28
	9.09	Decisions on Requirements of Contract Documents and Acceptability of Work	00700 - 28
	9.10 C	Limitations on ENGINEER's Authority and Responsibilities	00700 - 28
		CHANGES IN THE WORK; CLAIMS	00700 - 29
	10.01	Authorized Changes in the Work	
	10.02	Unauthorized Changes in the Work	
	10.03	Execution of Change Orders	
	10.04	Notification to Surety	
	10.05	Claims and Disputes	00700 - 30
		COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK	
	11.01	Cost of the Work	00700 - 30
	11.02	Cash Allowances	
	11.03	Unit Price Work	00700 - 32
ARTICL	E 12 - C	HANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES	00700 - 33
	12.01	Change of Contract Price	00700 - 33
	12.02	Change of Contract Times	00700 - 33
	12.03	Delays Beyond CONTRACTOR's Control	
	12.04	Delays Within CONTRACTOR's Control	00700 - 34
	12.05	Delays Beyond OWNER's and CONTRACTOR's Control	00700 - 34
	12.06	Delay Damages	00700 - 34
		ESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF	
		VE WORK	
	13.01	Notice of Defects	00700 - 34
	13.02	Access to Work	00700 - 34
	13.03	Tests and Inspections	00700 - 34
	13.04	Uncovering Work	
	13.05	OWNER May Stop the Work	00700 - 35
	13.06	Correction or Removal of Defective Work	00700 - 35

13.07		00700 - 35
13.08	Acceptance of Defective WorkOWNER May Correct Defective Work	00700 - 36
13.09	OWNER May Correct Defective Work	00700 - 36
ARTICLE 14 -	PAYMENTS TO CONTRACTOR AND COMPLETION	00700 - 36
14.01	Schedule of Values	00700 - 36
14.02	Progress Payments	00700 - 37
14.03	CONTRACTOR's Warranty of Title	
14.04		00700 - 38
14.05	Partial Utilization	00700 - 39
14.06	Final Inspection	00700 - 39
14.07	Final Payment	
14.08	Final Payment	00700 - 40
14.09	Waiver of Claims	00700 - 40
ARTICLE 15 -	SUSPENSION OF WORK AND TERMINATION	00700 - 40
15.01		00700 - 40
15.02	OWNER May Terminate for Cause	00700 - 40
15.03	OWNER May Terminate For Convenience	00700 - 41
15.04	CONTRACTOR May Stop Work or Terminate	00700 - 41
ARTICLE 16 -	DISPUTE RESOLUTION	00700 - 41
16.01	Methods and Procedures	00700 - 41
ARTICLE 17 -	MISCELLANEOUS	00700 - 42
17.01	MISCELLANEOUS	00700 - 42
17.02	Computation of Times	00700 - 42
17.03	Cumulative Remedies	00700 - 42
17.04	Survival of Obligations	00700 - 42
17.05	Controlling Law	00700 - 42

1.01 Defined Terms

- A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.
- 1. Addenda--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.
- 2. Agreement--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.
- 3. Application for Payment--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
- 4. Asbestos--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
- 5. *Bid*—The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- 6. Bidding Documents—The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
- 7. Bidding Requirements—The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.
- 8. *Bonds*—Performance and payment bonds and other instruments of security.
- 9. Change Order—A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

- 10. Claim—A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
- 11. Contract--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
- 12. Contract Documents--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.
- 13. Contract Price—The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).
- 14. Contract Times--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.
- 15. CONTRACTOR—The individual or entity with whom OWNER has entered into the Agreement.
- 16. Cost of the Work-See paragraph 11.01.A for definition.

- 17. Drawings—That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.
- 18. Effective Date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 19. *ENGINEER*--The individual or entity named as such in the Agreement.
- 20. ENGINEER's Consultant—An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.
- 21. Field Order--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
- 22. General Requirements—Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
- 23. Hazardous Environmental Condition—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
- 24. Hazardous Waste-The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 25. Laws and Regulations; Laws or Regulations—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 26. Liens--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 27. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

- 28. Notice of Award—The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.
- 29. Notice to Proceed--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.
- 30. *OWNER*—The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.
- 31. Partial Utilization—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.
 - 32. *PCBs*—Polychlorinated biphenyls.
- 33. Petroleum.-Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
- 34. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.
- 35. Project Manual.—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
- 36. Radioactive Material—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
- 37. Resident Project Representative—The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.
- 38. Samples—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

- 39. Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.
- 40. Site-Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.
- 41. Specifications—That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.
- 42. Subcontractor—An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.
- 43. Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
- 44. Supplementary Conditions—That part of the Contract Documents which amends or supplements these General Conditions.
- 45. Supplier--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.
- 46. Underground Facilities—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- 47. *Unit Price Work*—Work to be paid for on the basis of unit prices.

- 48. Work--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
- 49. Work Change Directive--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.
- 50. Written Amendment—A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. Furnish, Install, Perform, Provide

- 1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
- 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
- 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
- 4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.
- E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

2.01 Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. CONTRACTOR's Review of Contract Documents: undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures all applicable field measurements. and CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. Preliminary Schedules: Within ten days after the Effective Date of the Agreement (unless otherwise speci-

fied in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

- 1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents:
- 2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and
- 3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.
- C. Evidence of Insurance: Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.

2.06 Preconstruction Conference

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments

and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

- 1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.
- 2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.
- 3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.
- C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

A. Standards, Specifications, Codes, Laws, and Regulations

- 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
- 2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. Resolving Discrepancies

- 1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a, the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER's approval of a Shop Drawing or Sample; or (iii) ENGINEER's written interpretation or clarification.

3.05 Reuse of Documents

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

- A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.
- B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

- A. Reports and Drawings: The Supplementary Conditions identify:
 - 1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and
 - 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.
- B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not

Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

- 1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

- A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or
 - 3. differs materially from that shown or indicated in the Contract Documents; or
- 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. ENGINEER's Review: After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. Possible Price and Times Adjustments

- 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.
- 2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or
 - c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.
- 3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05.

However, OWNER, ENGINEER, and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 Underground Facilities

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 - 1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and
 - 2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:
 - a. reviewing and checking all such information and data,
 - b. locating all Underground Facilities shown or indicated in the Contract Documents.
 - c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to

OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price of Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 Reference Points

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Hazardous Environmental Condition at Site

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

- B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:
 - 1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.
- D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.
- E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected

area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

- F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR. Subcontractors. ENGINEER. ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.E shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental

Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.
- B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or

insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

5.04 CONTRACTOR's Liability Insurance

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

- 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
- 2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;
- 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;
- 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;
- 5. claims for damages, other than to the Work itself, because of injury to or destruction of

tangible property wherever located, including loss of use resulting therefrom; and

- 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:
 - 1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 - 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 - 3. include completed operations insurance;
 - 4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;
 - 5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);
 - 6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

5.05 OWNER's Liability Insurance

A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

- A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the interests of OWNER, CON-TRACTOR. Subcontractors, ENGINEER. ENGINEER's Consultants, other any and individuals entities identified or in Supplementary Conditions, and the officers. directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;
 - be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft. vandalism and malicious mischief. earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;
 - 3. include expenses incurred in the repair or replacement of any insured property (including but

not limited to fees and charges of engineers and architects);

- 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;
- 5. allow for partial utilization of the Work by OWNER;
 - 6. include testing and startup; and
- 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
- B. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.
- D. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 Waiver of Rights

- A. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.
- B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or

resulting from fire or other peril whether or not insured by OWNER; and

- 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.
- C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.
- B. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.
- 5.09 Acceptance of Bonds and Insurance; Option to Replace
- A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of

the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 Labor; Working Hours

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 Services, Materials, and Equipment

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

- A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. CONTRACTOR shall submit to ENGI-NEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 Substitutes and "Or-Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.
 - 1. "Or-Equal" Items: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength,

and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

- a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.
- c. The procedure for review by ENGI-NEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.
- d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the substitute item will prejudice proposed CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with

the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CON-TRACTOR to furnish additional data about the proposed substitute item.

- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.
- C. Engineer's Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.
- D. Special Guarantee: OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.
- E. ENGINEER's Cost Reimbursement: ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CON-

TRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

- F. CONTRACTOR's Expense: CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.
- 6.06 Concerning Subcontractors, Suppliers, and Others
- A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.
- C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or

entity except as may otherwise be required by Laws and Regulations.

- D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.
- E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRAC-TOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 Patent Fees and Royalties

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights

or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects. attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 Permits

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 Laws and Regulations

- A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.
- B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

6.10 Taxes

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

- 1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER. ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers. architects. attorneys. and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified

hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

- B. Removal of Debris During Performance of the Work: During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. Cleaning: Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. Loading Structures: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- 1. all persons on the Site or who may be affected by the Work;
- 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

- 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 Hazard Communication Programs

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

- B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.
- C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

- c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and
- d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
- 2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.
- 3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. ENGINEER's Review

- 1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 2. ENGINEER's review and approval will not extend to means, methods, techniques,

sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. Resubmittal Procedures

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 Continuing the Work

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 CONTRACTOR's General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

- 1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
- 2. normal wear and tear under normal usage.
- B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by ENGINEER;
 - 2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;
 - 4. use or occupancy of the Work or any part thereof by OWNER;
 - 5. any acceptance by OWNER or any failure to do so;
 - 6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;
 - 7. any inspection, test, or approval by others; or
 - 8. any correction of defective Work by OWNER.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

- 1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and
- 2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.
- B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of CONTRAC-TOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.01 Related Work at Site

- A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and
 - 2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.
- B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CON-TRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.
- C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

- A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified:
 - the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 Replacement of ENGINEER

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 Furnish Data

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 Pay Promptly When Due

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 Lands and Easements; Reports and Tests

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to

establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 Insurance

A. OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 Change Orders

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 Limitations on OWNER's Responsibilities

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 OWNER'S Representative

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 Visits to Site

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another

representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Clarifications and Interpretations

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 Authorized Variations in Work

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 Rejecting Defective Work

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 Shop Drawings, Change Orders and Payments

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

- B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.
- C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 Determinations for Unit Price Work

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.
- B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 Limitations on ENGINEER's Authority and Responsibilities

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the

Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.
- C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 Unauthorized Changes in the Work

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 Execution of Change Orders

- A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:
 - 1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Workactually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be

CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 Claims and Disputes

- A. Notice: Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).
- B. ENGINEER's Decision: ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:
 - 1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or
 - 2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

- C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.
- D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

A. Costs Included: The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

- 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with GONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.
- Payments made by CONTRACTOR to 3. Work performed Subcontractors for If required by OWNER, CON-Subcontractors. TRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CON-TRACTOR and shall deliver such bids to OWNER. who will then determine, with the advice of ENGI-NEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.
- 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
- 5. Supplemental costs including the following:
- a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.
- b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.
- c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the

- advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- Losses and damages (and related f. expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.
- i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.
- j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds

and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
 - 1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.
 - 2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.
 - 3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
 - 4. Costs due to the negligence of CON-TRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.
- C. CONTRACTOR's Fee: When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C.
- D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally

accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 Cash Allowances

- A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:
 - 1. the allowances include the cost to CON-TRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.
- B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.
- C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

- 1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
- 2. there is no corresponding adjustment with respect any other item of Work; and
- 3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

- C. CONTRACTOR's Fee: The CONTRACTOR's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;
 - b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other

party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 Delays Beyond CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 Delays Within CONTRACTOR's Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 Delays Beyond OWNER's and CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 Delay Damages

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

- 1. delays caused by or within the control of CONTRACTOR; or
- 2. delays beyond the control of both OWNER and CONTRACTOR including but not

limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

- A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

- 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.
- D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.
- F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.
- B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation,

inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 OWNER May Stop the Work

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 Correction Period

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly,

without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

- B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.
- C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by

CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 OWNER May Correct Defective Work

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

- B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.
- C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages

will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments

- At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.
- 2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge

CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to pro-gress payments will be as stipulated in the Agreement.

B. Review of Applications

- 1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.
- 2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and
 - c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.
- 3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities

specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

- 4. ENGINEER's Neither review CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.
- 5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Written Amendment or Change Orders;
 - c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or
 - d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

D. Reduction in Payment

- 1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:
 - a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWN-ER to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling OWNER to a set-off against the amount recommended; or
 - d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.
- 2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.
- 3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 CONTRACTOR's Warranty of Title

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion. ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

- A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.
 - OWNER at any time may request CON-TRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CON-TRACTOR will certify to OWNER and ENGI-NEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this

inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment

- 1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract all maintenance Documents. and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.
- 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. Review of Application and Acceptance

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents,

ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled. ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CON-TRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 Final Completion Delayed

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
 - 1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appear-

ing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRAC-TOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 OWNER May Suspend Work

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 OWNER May Terminate for Cause

- A. The occurrence of any one or more of the following events will justify termination for cause:
 - 1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);
 - 2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. CONTRACTOR's disregard of the authority of ENGINEER; or
 - 4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written

notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 OWNER May Terminate For Convenience

- A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):
 - 1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection

with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

- 3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
- 4. for reasonable expenses directly attributable to termination.
- B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 CONTRACTOR May Stop Work or Terminate

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject

to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

SUPPLEMENTARY CONDITIONS

- 1. SUPPLEMENTS
- 1.01 THESE SUPPLEMENTARY CONDITIONS AMEND OR SUPPLEMENT THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT, NSPE DOCUMENT 1910-8, 1996 EDITION, AND OTHER PROVISIONS OF THE CONTRACT DOCUMENTS TO THE EXTENT INDICATED. ALL PROVISIONS WHICH ARE NOT SO AMENDED OR SUPPLEMENTED REMAIN IN FULL FORCE AND EFFECT.
- 2. DEFINITIONS
- 2.01 THE TERMS USED IN THESE SUPPLEMENTARY CONDITIONS WHICH ARE DEFINED IN THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT (NO. 1910-8, 1996 EDITION) HAVE THE MEANINGS ASSIGNED TO THEM IN THE GENERAL CONDITIONS EXCEPT THAT THE "ENGINEER" SHALL BE THE OWNER OR HIS DESIGNATED REPRESENTATIVE.
- 2.02 ADD TO ARTICLE 1 DEFINITIONS AND TERMINOLOGY
 - A. "COMPLETION" AND "SUBSTANTIAL COMPLETION" AS THESE TERMS APPLY TO CONTRACT TIME (ARTICLE 12), COMPLETION (ARTICLE 14), COMPUTATION OF TIME (PARAGRAPH 17.02), AND CONTRACT TIME AND LIQUIDATED DAMAGES (FORM OF AGREEMENT, ARTICLE 3) SHALL BE THE SAME.
 - B. "ENGINEER" SHALL BE THE OWNER OR HIS DESIGNATED REPRESENTATIVE.
- 3. COPIES OF DOCUMENTS: MODIFY ARTICLE 2.02 AS FOLLOWS: FOR CONSTRUCTION PURPOSES THE CONTRACTOR WILL BE ISSUED, FREE OF CHARGE, THE FOLLOWING DOCUMENTS:

PROJECT MANUALS - THREE SETS

ORIGINAL SIZE DRAWINGS - THREE SETS OF PRINTS OR ONE SET OF REPRODUCIBLES

IF THE CONTRACTOR REQUIRES ADDITIONAL SETS OF DOCUMENTS DURING THE CONSTRUCTION PERIOD (ABOVE THE NUMBER SPECIFIED ABOVE), HE MAY OBTAIN THEM AT THE COST OF REPRODUCTION.

4. REPLACE THE FOLLOWING SENTENCE IN ARTICLE 4, PARAGRAPH 4.01 B.:

"UPON REASONABLE WRITTEN REQUEST, OWNER SHALL ... APPLICABLE LAWS AND REGULATIONS."

WITH THE FOLLOWING SENTENCE:

"RECORD LEGAL TITLE AND LEGAL DESCRIPTION OF THE LANDS UPON WHICH THE WORK IS TO BE PERFORMED MAY BE OBTAINED AT THE CITY OF LYNCHBURG CLERK OF CIRCUIT COURT'S OFFICE AT THE COST OF REPRODUCTION."

5. PRIOR TO BIDDING, CONTRACTOR MAY MAKE SUBSURFACE INVESTIGATIONS IN CITY RIGHT OF WAYS AND IN EASEMENTS ONLY IF COORDINATED THROUGH WILEY & WILSON, DAN ROBERTSON, P.E., (434) 947-1901.

- 6. BONDS
- 6.01 ADD THE FOLLOWING TO ARTICLE 5, PARAGRAPH 5.01.
 - "D. THE CONTRACTOR SHALL SECURE AND PROVIDE ALL BONDS CALLED FOR IN THE GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS. ALL BONDS SHALL BE WRITTEN BY SURETIES OR INSURANCE COMPANIES LICENSED TO DO BUSINESS IN THE COMMONWEALTH OF VIRGINIA."
- 7. INSURANCE: THE CONTRACTOR SHALL PURCHASE AND MAINTAIN THE INSURANCE, COVERED BY ARTICLE 5 OF THE GENERAL CONDITIONS, IN AT LEAST THE FOLLOWING AMOUNTS:
- 7.01 CONTRACTOR'S COMPREHENSIVE GENERAL LIABILITY (BODILY INJURY AND PROPERTY DAMAGE) SHALL BE PROVIDED FOR THE FOLLOWING MINIMUM LIMITS:
 - A. BODILY INJURY LIABILITY
- 1,000,000 DOLLARS SINGLE LIMIT
- B. PROPERTY DAMAGE LIABILITY
- 1,000,000 DOLLARS SINGLE LIMIT
- C. THE GENERAL LIABILITY INSURANCE SHALL INCLUDE THE FOLLOWING MINIMUM COVERAGES:
 - (1) COMPREHENSIVE FORM
 - (2) PREMISES OPERATIONS
 - (3) EXPLOSION AND COLLAPSE HAZARD
 - (4) UNDERGROUND HAZARDS
 - (5) PRODUCTS/COMPLETED OPERATIONS HAZARD
 - (6) CONTRACTUAL LIABILITY INSURANCE
 - (7) BROAD FORM PROPERTY DAMAGE, INCLUDING COMPLETED OPERATIONS
 - (8) INDEPENDENT CONTRACTORS (CONTRACTOR'S PROTECTIVE LIABILITY)
 - (9) PERSONAL INJURY (ALL INSURING AGREEMENTS), DELETING THE EMPLOYEE EXCLUSION.
 - (10) OWNER'S PROTECTIVE LIABILITY, SEPARATE POLICY IN NAME OF OWNER.
- 7.02 CONTRACTOR'S AUTOMOBILE LIABILITY (BODILY INJURY AND PROPERTY DAMAGE) SHALL BE PROVIDED FOR THE FOLLOWING MINIMUM LIMITS:
 - A. BODILY INJURY LIABILITY

500,000 DOLLARS EACH PERSON 1,000,000 DOLLARS EACH OCCURRENCE

- B. PROPERTY DAMAGE LIABILITY
- 200,000 DOLLARS EACH OCCURRENCE
- C. THE AUTOMOBILE LIABILITY INSURANCE SHALL INCLUDE THE FOLLOWING COVERAGES:
 - (1) COMPREHENSIVE FORM
 - (2) OWNED

- (3) HIRED
- (4) NONOWNER
- 7.03 EXCESS CATASTROPHE COVERAGE SHALL BE PROVIDED BY THE CONTRACTOR WITH A MINIMUM LIMIT OF 4,000,000 DOLLARS.
- 7.04 CONTRACTOR'S WORKER'S COMPENSATION INSURANCE AS REQUIRED BY FEDERAL, STATE, AND MUNICIPAL LAWS FOR THE PROTECTION OF ALL CONTRACTORS' EMPLOYEES WORKING ON OR IN CONNECTION WITH THE PROJECT, INCLUDING BROAD FORM ALL STATES AND VOLUNTARY COMPENSATION COVERAGE AND EMPLOYERS' LIABILITY COVERAGE.
- 7.05 FIRE, EXTENDED COVERAGE, VANDALISM, AND MALICIOUS MISCHIEF (COMPLETED VALUE BUILDER'S RISK) INSURANCE AS SPECIFIED UNDER THE GENERAL CONDITIONS, ARTICLE 5.6, SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL PURCHASE "ALL RISK" TYPE BUILDER'S RISK INSURANCE. THE POLICY SHALL COVER NOT LESS THAN THE LOSSES DUE TO FIRE, EXPLOSION, HAIL, LIGHTNING, VANDALISM, MALICIOUS MISCHIEF, WIND, WATER, FLOOD, COLLAPSE, RIOT, AIRCRAFT, AND SMOKE DURING THE CONTRACT TIME, AND UNTIL THE WORK IS ACCEPTED BY THE OWNER. THE BUILDER'S RISK INSURANCE SHALL BE FOR THE BENEFIT OF THE OWNER, THE CONTRACTOR, AND THE SUBCONTRACTORS, AS THEIR INTEREST MAY APPEAR.
- 7.06 THE CONTRACTOR SHALL REQUIRE HIS INSURANCE AGENT TO CERTIFY ON THE INSURANCE CERTIFICATE THAT THE INSURANCE COVERAGE SPECIFIED BY THESE SUPPLEMENTARY CONDITIONS IS FULLY IN EFFECT, BOTH IN SCOPE AND AMOUNT. IF INSURANCE COVERAGE IS AFFECTED WITH MORE THAN ONE COMPANY, THE INDIVIDUAL CERTIFICATES SHALL IDENTIFY THE ITEMS OF INSURANCE WHICH THE INDIVIDUAL COMPANIES COVER. THE INSURANCE CERTIFICATE SHALL CONTAIN A PROVISION THAT COVERAGE AFFORDED UNDER THE POLICIES WILL NOT BE CANCELED OR MATERIALLY CHANGED UNLESS AT LEAST 30 DAYS PRIOR WRITTEN NOTICE HAS BEEN GIVEN TO THE OWNER.
- 7.07 UNDER ARTICLE 5, DELETE PARAGRAPHS 5.05 AND 5.06.
- 7.08 THE INSURANCE POLICIES SHALL INCLUDE OR BE ENDORSED TO INCLUDE THE FOLLOWING PROVISIONS:
 - A. ANY DEDUCTIBLES OR SELF-INSURED RETENTION APPLICABLE TO REQUIRED COVERAGE SHALL BE PAID BY THE CONTRACTOR, AND THE OWNER SHALL NOT BE REQUIRED TO PARTICIPATE THEREWITH.
 - B. THE INSURANCE REQUIRED HEREUNDER SHALL BE PRIMARY AND ANY INSURANCE OR SELF-INSURANCE MAINTAINED BY THE OWNER SHALL BE EXCESS OF THE CONTRACTOR'S INSURANCE AND SHALL NOT CONTRIBUTE THEREWITH.
 - C. FAILURE OF THE CONTRACTOR TO COMPLY WITH ANY REPORTING PROVISIONS OF THE INSURANCE POLICIES REQUIRED HEREUNDER SHALL NOT AFFECT COVERAGE PROVIDED TO THE OWNER.
 - D. ALL RIGHTS OF SUBROGATION AGAINST THE OWNER SHALL BE WAIVED.
 - E. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH CERTIFICATES OF INSURANCE WITH APPLICABLE ENDORSEMENTS AFFECTING COVERAGE, SIGNED BY A PERSON AUTHORIZED BY THE INSURANCE COMPANY TO BIND COVERAGE ON ITS BEHALF. ALL REQUIRED CERTIFICATES OF INSURANCE SHALL BE RECEIVED BY THE OWNER PRIOR TO COMMENCEMENT OF ANY WORK UNDER THIS CONTRACT.

- F. ALL COVERAGE FOR SUBCONTRACTORS OF THE CONTRACTOR, IF ANY, SHALL BE SUBJECT TO ALL OF THE REQUIREMENTS STATED HEREIN.
- 7.09 ALL INSURANCE SHALL BE WRITTEN BY INSURANCE COMPANIES LICENSED TO DO BUSINESS IN THE COMMONWEALTH OF VIRGINIA.
- 7.10 ALL CERTIFICATES OF INSURANCE SHALL NAME THE CITY OF LYNCHBURG, THE OFFICERS AND EMPLOYEES OF THE CITY OF LYNCHBURG, WILEY & WILSON, INC., AND THE OFFICERS AND EMPLOYEES OF WILEY & WILSON, INC. AS ADDITIONAL INSUREDS.
- 8. CONTRACTOR'S RESPONSIBILITIES
- 8.01 LABOR, MATERIALS, AND EQUIPMENT: ADD THE FOLLOWING TO PARAGRAPH 6.05:

 "ALL MATERIALS INCORPORATED IN THE WORK OF THIS CONTRACT SHALL BE FREE OF ASBESTOS AND OTHER HAZARDOUS MATERIALS."
- 8.02 SUBCONTRACT WORK: ADD THE FOLLOWING TO PARAGRAPH 6.06.B:
 - "6.06.B EXCEPT AS OTHERWISE NOTED HEREIN, CONTRACT WORK AMOUNTING TO NOT LESS THAN 80 PERCENT OF THE TOTAL PROJECT OR CONTRACT SHALL BE PERFORMED WITH THE CONTRACTOR'S OWN ORGANIZATION. 'SPECIALTY ITEMS' SO DESIGNATED BY THE CITY ENGINEER MAY BE PERFORMED BY SUBCONTRACT AND THE COST OF ANY 'SPECIALTY ITEMS' SO PERFORMED MAY BE DEDUCTED FROM THE TOTAL PROJECT OR CONTRACT COST BEFORE COMPUTING THE AMOUNT OF WORK REQUIRED TO BE PERFORMED BY THE CONTRACTOR'S OWN ORGANIZATION. 'SPECIALTY ITEMS' FOR THIS PROJECT SHALL CONSIST OF CONCRETE WORK, LANDSCAPING, SEEDING, BORING AND SEWER LINING WORK."
- 8.03 A BLASTING PERMIT ISSUED BY THE CITY FIRE MARSHAL WILL BE REQUIRED FOR BLASTING, THIS PERMIT MAY REQUIRE ADDITIONAL INSURANCE COVERAGE.
- 8.04 A BUSINESS LICENSE WILL BE REQUIRED AND WILL BE \$0.16 PER \$100 ON GROSS FEE AND SHALL BE OBTAINED FROM THE COMMISSIONER OF REVENUE.
- 8.05 TAXES: ADD THE FOLLOWING TO PARAGRAPH 6.10:
 - "B. PORTIONS OF THIS PROJECT HAVE BEEN APPROVED AS A POLLUTION CONTROL FACILITY AND CERTIFIED TO THE VIRGINIA DEPARTMENT OF TAXATION FOR EXEMPTION FROM SALES AND USE TAXES ACCORDING TO THE CODE OF VIRGINIA 58.1-3660. THE CONTRACTOR SHALL REQUEST THE APPLICABLE SALES AND USE TAX EXEMPTION CERTIFICATE FROM THE VIRGINIA DEPARTMENT OF TAXATION THROUGH THE SOUTH CENTRAL REGIONAL OFFICE OF THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY LOCATED IN LYNCHBURG, VIRGINIA. ONLY THE STORM AND SANITARY SEWER LINES AND APPURTENANCES ARE EXEMPT FROM SALES AND USE TAXES."
- 8.06 INDEMNIFICATION: IN PARAGRAPH 6.20, CHANGE THE WORD "ENGINEER" TO "OWNER" IN TWO LOCATIONS.
- 8.07 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY AT THE JOB SITE AND SHALL COMPLY WITH ALL OSHA REGULATIONS.
- 9. ADD THE FOLLOWING TO ARTICLE 9, PARAGRAPH 9.03:
 - "B. INSPECTORS EMPLOYED BY THE CITY OR WILEY & WILSON WILL BE AUTHORIZED TO INSPECT ALL WORK DONE AND ALL MATERIALS FURNISHED. SUCH INSPECTION MAY EXTEND TO ALL OR ANY PART OF THE WORK AND TO THE PREPARATION, FABRICATION, OR MANUFACTURE OF THE MATERIALS USED. THE

INSPECTOR WILL NOT BE AUTHORIZED TO REVOKE, ALTER, OR WAIVE ANY REQUIREMENTS OF THESE SPECIFICATIONS; HOWEVER, HE WILL HAVE AUTHORITY TO REJECT MATERIALS OR SUSPEND THE WORK UNTIL ANY QUESTIONS OR ISSUES CONCERNING MATERIALS CAN BE REFERRED TO AND DECIDED BY THE ENGINEER. THE PRESENCE OR ABSENCE OF AN INSPECTOR SHALL NOT LESSEN THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY PERFORM THE WORK."

- 10. ADD THE FOLLOWING TO ARTICLE 12.02:
 - "12.02.C. TIME EXTENSIONS FOR ABNORMAL WEATHER:
 - 12.02.C.1 THIS PROVISION SPECIFIES THE PROCEDURE FOR THE DETERMINATION OF TIME EXTENSIONS FOR ABNORMAL WEATHER IN ACCORDANCE WITH THE CONTRACT GENERAL CONDITION 12.4.

THIS LISTING BELOW DEFINES THE MONTHLY ANTICIPATED WORKING DAYS OF ADVERSE WEATHER FOR EACH MONTH AND IS BASED UPON NOAA CLIMATOLOGICAL DATA FOR LYNCHBURG, VIRGINIA.

JAN FEB MAR APR MAY JUNE JUL AUG SEP OCT NOV DEC 8 7 8 7 8 7 6 6 6 7

- 12.02.C.2 THE ANTICIPATED DAYS PROVIDED ABOVE WILL CONSTITUTE THE BASE LINE FOR MONTHLY WEATHER TIME EVALUATIONS. THROUGHOUT THE CONTRACT, ACTUAL WEATHER WORKING DAYS ARE TO BE RECORDED AND COMPARED TO THE MONTHLY ANTICIPATED WORKING DAYS.
- 12.02.C.3 ONCE THE NUMBER OF ACTUAL ADVERSE WEATHER WORKING DAYS EXCEEDS THE ANTICIPATED WORKING DAYS, ANY SUBSEQUENT DAYS MAY BE USED AS A BASIS TO DETERMINE WHETHER A CONTRACTOR IS ENTITLED TO A TIME EXTENSION. THE ADVERSE WEATHER MUST HAVE PREVENTED WORK FOR 50 PERCENT OR MORE OF THE CONTRACTOR'S WORK DAY AND DELAYED WORK CRITICAL TO THE TIMELY COMPLETION OF THE PROJECT.
- 12.02.C.4 THE CONTRACTOR'S SCHEDULE MUST INDICATE THE CRITICAL (PATH) WORK AND MUST REFLECT THE ABOVE ANTICIPATED ADVERSE WEATHER DAYS ON ALL WEATHER DEPENDENT ACTIVITIES.
- 12.02.C.5 AT THE END OF EACH QUARTER OF THE CALENDAR YEAR, THE ANTICIPATED DAYS SCHEDULED WILL BE BALANCED WITH THE ACTUAL ADVERSE WEATHER DAYS."
- 11. REPLACE PARAGRAPH 14.02.C WITH THE FOLLOWING:

"14.02.C. - PAYMENTS

- 14.02.C.1 THE OWNER WILL MAKE PARTIAL PAYMENTS TO THE CONTRACTOR ON THE LAST BUSINESS DAY OF THE MONTH BY CHECK VIA FIRST CLASS MAIL THROUGH THE U. S. POSTAL SERVICE FOR A DULY CERTIFIED AND APPROVED ESTIMATE OF WORK PERFORMED DURING THE PRECEDING CALENDAR MONTH (SUBJECT TO THE PROVISIONS OF THE LAST SENTENCE OF PARAGRAPH 14.7) AND THE AGREEMENT.
- 14.02.C.2 THE CONTRACTOR SHALL TAKE ONE OF THE TWO FOLLOWING ACTIONS WITHIN SEVEN DAYS AFTER RECEIPT OF PAYMENT FROM THE OWNER WITH REGARDS TO WORK PERFORMED BY A SUBCONTRACTOR AND/OR SUPPLIER UNDER THEIR CONTRACT:

- A. PAY THE SUBCONTRACTOR AND/OR SUPPLIER FOR THE PROPORTIONATE SHARE OF THE TOTAL PAYMENT RECEIVED FROM THE OWNER ATTRIBUTABLE TO THE WORK PERFORMED BY THE SUBCONTRACTOR AND/OR SUPPLIER UNDER THAT CONTRACT; OR
- B. NOTIFY THE OWNER AND SUBCONTRACTOR AND/OR SUPPLIER, IN WRITING, OF HIS INTENTION TO WITHHOLD ALL OR PART OF THE SUBCONTRACTOR'S AND/OR SUPPLIER'S PAYMENT WITH THE REASON FOR NONPAYMENT.
- 14.02.C.3 THE CONTRACTOR WILL PAY INTEREST TO THE SUBCONTRACTOR AND/OR SUPPLIER ON ALL AMOUNTS OWED BY THE CONTRACTOR THAT REMAIN UNPAID AFTER SEVEN DAYS FOLLOWING RECEIPT BY THE CONTRACTOR OF PAYMENT FROM THE OWNER FOR WORK PERFORMED BY THE SUBCONTRACTOR AND/OR SUPPLIER UNDER THIS CONTRACT, EXCEPT FOR AMOUNTS WITHHELD AS ALLOWED ABOVE. INTEREST SHALL ACCRUE AT THE RATE OF ONE PERCENT PER MONTH.
- 14.02.C.4 THE CONTRACTOR SHALL INCLUDE IN EACH OF ITS SUBCONTRACTS A PROVISION REQUIRING EACH SUBCONTRACTOR AND/OR SUPPLIER TO INCLUDE OR OTHERWISE BE SUBJECT TO THE SAME PAYMENT AND INTEREST REQUIREMENTS WITH RESPECT TO EACH LOWERTIER SUBCONTRACTOR AND/OR SUPPLIER. A CONTRACTOR'S OBLIGATION TO PAY AN INTEREST CHARGE TO A SUBCONTRACTOR AND/OR SUPPLIER PURSUANT TO THE PAYMENT CLAUSE IN THIS SECTION MAY NOT BE CONSTRUED TO BE AN OBLIGATION OF THE OWNER'S. A CONTRACT MODIFICATION MAY NOT BE MADE FOR THE PURPOSE OF PROVIDING REIMBURSEMENT FOR SUCH INTEREST CHARGE. A COST REIMBURSEMENT CLAIM MAY NOT INCLUDE ANY AMOUNT FOR REIMBURSEMENT FOR SUCH INTEREST CHARGE."
- 12. DELETE ARTICLE 16 DISPUTE RESOLUTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:
 - "16.01 THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE COMMONWEALTH OF VIRGINIA. DISPUTES WILL BE RESOLVED BY A VIRGINIA COURT OF COMPETENT JURISDICTIONS."

END OF SUPPLEMENTARY CONDITIONS

Special Conditions

FEDERAL REQUIREMENTS AND CONTRACT PROVISIONS FOR THE

APPROPRIATION ACT PROJECTS

ENVIRONMENTAL PROTECTION AGENCY Region III

The project or segment thereof to be constructed in accordance with these contract documents is subject to the following Federal requirements. In the event of conflict with other requirements of the contract documents. the following Federal requirements control unless the Federal requirement is a minimum requirement. Nothing in this document shall be construed to prohibit the owner from requiring additional assurances, guarantees, indemnities, or-other contractual requirements from any other party to this agreement.

This Federal insert has been provided by the Owner to the Contractor for two reasons. Section I, IV, and V are required provisions of the construction contract and are hereby incorporated in that contract. The remaining sections have been provided as an aid in complying with Federal requirements, and highlight particular sections of the regulations and regional requirements with which the bidders should be familiar.

THE BIDDERS SHOULD BE PARTICULARLY AWARE OF THE FOLLOWING CRITICAL REQUIREMENTS CONTAINED HEREIN:

- 1. THE AFFIRMATIVE ACTION PROGRAM REQUIREMENTS AND GOALS.
- 2. THE MINORITY BUSINESS ENTERPRISE (MBE) PROGRAM REQUIREMENTS.
- 3. THE MBE DOCUMENTATION REQUIREMENTS.
- 4. THE CERTIFICATION OF NONSEGREGATED FACILITIES.

Any contract or contracts awarded under this invitation for bids are expected to be funded in part by a grant from the U.S. Environmental Protection Agency. Neither the United States nor any of its departments. agencies or employees is or will be a party to this invitation for bids or any resulting contract. This procurement will be subject to regulations contained in 40 CFR PART 31.

OCT 1997 (re-formatted March 2003)

Special Conditions

CONTENTS

SECTION	TITLE	PAGE
1	MODEL SUBAGREEMENT CLAUSES	F-3
II	NONDISCRIMINATION IN EMPLOYMENT	F - 7
Ш	CERTIFICATION OF NONSEGREGATED FACILITIES	F - 7
V	AFFIRMATIVE ACTION REQUIREMENTS	F-9
V	AFFIRMATIVE ACTION PROGRAM	F - 11
VI	REQUIRED PROVISIONS OF 40 CFR PART 31 SUBPART C	F - 13
VII	ATTACHMENTS	
	1. EXTRACTS FROM THE FEDERAL REGISTER	
	2. NOTICE OF NONDISCRIMINATION OF EMPLOYMENT	
	3. CERTIFICATION OF NONSEGREGATED FACILITIES	

I MODEL SUBAGREEMENT CLAUSES APPROPRIATION ACT PROJECTS

§31.36 Model subagreement clauses.

- (a) Recipients must include, when appropriate, the following thirteen clauses or their equivalent in each subagreement.
- (b) Recipients may substitute other terms for "recipient" and "contractor" in their subagreements.

1. Supersession

The recipient and the contractor agree that this and other appropriate clauses in 40 CFR 31.36 or their equivalent apply to the EPA funded work to be performed under this subagreement and that these clauses supersede any conflicting provisions in this subagreement.

2. Privity of Subagreement

This subagreement is expected to be funded in part with funds from the U.S. Environmental Protection Agency. Neither the United States nor any of its departments, agencies, or employees is or will be a party to this subagreement or any lower tier subagreement. This subagreement is to be subject to regulations contained in 40 CFR Part 31 in effect on the date of the assistance award for this project.

3. Changes

- a) This clause in paragraph (a) applies only to subagreements for construction.
- (1) The recipient may, at any time, without notice to any surety, by written order designated or indicated to be a change order, make any change in the work within the general scope of the subagreement, including but not limited to changes:
 - (i) In the specifications (including drawings and designs);
 - (ii) In the time, method, or manner of performance of the work;
- (iii) In the recipient-furnished facilities, equipment, materials, services, or site; or
 - (iv) Directing acceleration in the performance of work.
- (2) A change order shall also be any other written order (including direction, instruction, interpretation or determination) from the recipient which causes any change, provided the contractor gives the recipient written notice stating the date, circumstances, and source of the order and that the contractor regards the order as a change order.
- (3) Except as provided in this clause, no order, statement, or conduct of the recipient shall be treated as a change under this clause or entitle the contractor to an equitable adjustment.
- (4) If any change under this clause causes an increase or decrease in this contractor's cost or the time required to perform any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the subagreement modified in writing and, except for claims based on defective specifications, no claim for any change under paragraph (a)(2) above shall be allowed for any costs incurred more than 20 days before the contractor gives written notice as required in paragraph (a)(2). In the case of defective specifications for which the recipient is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the contractor in attempting to comply with those defective specifications
- (5) If the contractor intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under paragraph (1) of this change clause or the furnishing of a written notice under paragraph (2) of this clause, submit to the recipient a written statement setting forth the general nature and monetary extent of such claim. The recipient may extend the 30-day

- period. The statement of claim may be included in the notice under paragraph (2) of this change clause.
- (6) No claim by the Contractor for an equitable adjustment shall be allowed if made after final payment under this subagreement.
- (b) The clause in this paragraph applies to subagreements for services.
- (1) The recipient may, at any time, by written order, make changes within the general scope of this agreement in the services or work to be performed. If such changes cause an increase or decrease in the contractor's cost or time required to perform any services under this agreement, whether or not changed by any order, an equitable adjustment shall be made and this agreement shall be modified in writing. The contractor must assert any claim for adjustment under this clause in writing within 30 days from the date of receipt by the contractor of the notification of change unless the recipient grants additional time before the date of final payment.
- (2) No services for which an additional compensation will be charged by the contractor shall be furnished without the written authorization of the recipient.
- (c) This clause in paragraph (c) applies only to subagreements for supplies.
- (1) The recipient may at any time, by a written order, and without notice to the sureties, make changes, within the general scope of this subagreement, in any one or more of the following:
- (i) Drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the recipient:
 - (ii) Method of shipment or packing: and
 - (iii) Place of delivery.
- (2) If any change causes an increase or decrease in the cost or the time required to perform any part of the work under this subagreement, whether or not changed by any such order, an equitable adjustment shall be made in the subagreement price or delivery schedule, or both, and the subagreement shall be modified in writing. Any claim by the contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the contractor of the notification of change. If the recipient decides that the facts justify such action, the recipient may receive and act upon any such claim asserted at any time before final payment under this subagreement. Where the cost of property made obsolete or excess as a result of a change is included in the contractor's claim for adjustment, the recipient shall have the right to prescribe the manner of disposition of such property. Nothing in this clause shall excuse the contractor from proceeding with the subagreement as changed.

4. Differing Site Conditions

(This clause is applicable only to construction subagreements.)
(a) The contractor shall promptly, and before such conditions are disturbed, notify the recipient in writing of:

(1) subsurface or latent physical conditions at the site differing materially from those indicated in this subagreement, or

- (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this subagreement. The recipient shall promptly investigate the conditions, and if it finds that conditions materially differ and will cause an increase or decrease in the contractor's cost or the time required to perform any part of the work under this sub agreement, whether or not changed as a result of such conditions, an equitable adjustable shall be made and the subagreement modified in writing.
- (b) No claim of the contractor under this clause shall be allowed unless the contractor has given the notice required in paragraph (a) of this clause. However, the recipient may extend the time prescribed in paragraph (a).
- (c) No claim by the contractor for an equitable adjustment shall be allowed if asserted after final payment under this subagreement.

5. Suspension of Work

(This clause is applicable only to construction subagreements.)

- (a) The recipient may order the contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as the recipient may determine to be appropriate for the convenience of the recipient.
- (b) If the performance of all or any part of the work is suspended, delayed, or interrupted for an unreasonable period of time by an act of the recipient in administration of this subagreement, or by the recipient's failure to act within the time specified in this subagreement (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this subagreement (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent (1) that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the contractor or (2) for which an equitable adjustment is provided for or excluded under any other provision of this subagreement.
- (c) No claim under this clause shall be allowed (1) for any costs incurred more than 20 days before the contractor notified the recipient in writing of the act or failure to act involved (this requirement does not apply to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the subagreement.

6. Termination

- (a) This subagreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this subagreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given (1) not less than ten (10) calendar days' written notice (delivered by certified mail, return receipt requested) of intent to terminate and (2) an opportunity for consultation with the terminating party prior to termination.
- (b) This subagreement may be terminated in whole or in part in writing by the recipient for its convenience, provided that the contractor

- is given (1) not less than ten (10) calendar days' written notice (delivered by certified mail, return receipt requested) of intent to terminate and (2) an opportunity for consultation with the terminating party prior to termination.
- (c) If termination for default is effected by the recipient, an equitable adjustment in the price provided for in this subagreement shall be made, but (1) no amount shall be allowed for anticipated profit on unperformed services or other work, and (2) any payment due to the contractor at the time of termination may be adjusted to cover any additional costs to the recipient because of the contractor's default. If termination for default is effected by the contractor, or if termination for convenience is effected by the recipient, the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to the contractor for services rendered and expenses incurred prior to the termination, in addition to termination settlement costs reasonably incurred by the contractor relating to commitments which had become firm prior to the termination.
- (d) Upon receipt of a termination action pursuant to paragraphs (a) or (b) above, the contractor shall (1) promptly discontinue all services affected (unless the notice directs otherwise), and (2) deliver or otherwise make available to the recipient all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by the contractor in performing this subagreement, whether completed or in process.
- (e) Upon termination under paragraphs (a) or (b) above, the recipient may take over the work and may award another party a subagreement to complete the work under this subagreement.
- (f) If, after termination for failure of the contractor to fulfill contractual obligations, it is determined that the contractor had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the recipient. In such event, adjustment of the price provided for in this subagreement shall be made as provided in paragraph (c) of this clause.

7. Remedies

Except as may be otherwise provided in this subagreement, all claims, counter-claims, disputes, and other matters in question between the recipient and the contractor arising out of or relating to this subagreement or the breach thereof will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the recipient is located.

8. Price Reduction for Defective Cost or Pricing Data

Note.—This clause is applicable to (l) any subagreement negotiated between the recipient and its contractor in excess of \$100,000; (2) negotiated subagreement amendments or change orders in excess of \$100,000 affecting the price of a formally advertised, competitively awarded, fixed price subagreement: or (3) any lower tier subagreement or purchase order in excess of \$100,000 under a subagreement other than a formally advertised, competitively awarded, fixed price subagreement. This clause is not applicable for subagreements to the extent that they are awarded on the basis of effective price competition.

(a) The contractor and subcontractor, where appropriate, warrant that cost and pricing data submitted for evaluation with respect to negotiation of prices for negotiated subagreements, lower tier subagreements, and change orders is based on current, accurate and complete data supported by their books and records. If the recipient or EPA determines that any price (including profit) negotiated in connection with this subagreement; any lower tier subagreement, or any amendment thereunder was increased by any significant sums because

the data provided was incomplete, inaccurate, or not current at the time of submission, then such price or cost or profit shall be reduced accordingly: and the subagreement shall be modified in writing to reflect such action.

(b) Failure to agree on a reduction shall be subject to the remedies clause of this agreement.

Note.--Since the subagreement is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with lower tier subagreements, the contractor may wish to include a clause in each lower tier subagreement requiring the contractor to appropriately indemnify the contractor. It is also expected that any lower tier subcontractor subject to such indemnification will generally require substantially similar indemnification or defective cost or pricing data required to be submitted by lower tier contractors.

9. Audit; Access to Records

- (a) The contractor shall maintain books, records, documents, and other evidence directly pertinent to performance on EPA funded work under this subagreement in accordance with generally accepted accounting principles and practices consistently applied, and 40 CFR Part 31, in effect on the date of execution of this subagreement. The contractor shall also maintain the financial information and data used by the contractor in the preparation or support of the cost submission required under 40 CFR 31.36(f) for any negotiated subagreement or change order and a copy of the cost summary submitted to the recipient. The United States Environmental Protection Agency, the Comptroller General of the United States, the United States Department of Labor, recipient, and [State] or any of their authorized representatives shall have access to all such books, records, documents, and other evidence for the purpose of inspection, audit and copying during normal business hours. The contractor will provide proper facilities for such access and inspection.
- (b) If this is a formally advertised, competitively awarded, fixed price subagreement, the contractor agrees to make paragraphs (a) through (g) of this clause applicable to all negotiated change orders and subagreement amendments affecting the subagreement price. In the case of all other types of prime subagreements, the contractor agrees to include paragraphs (a) through (g) of this clause in all his subagreements in excess of \$10,000 and all lower tier subagreements in excess of \$10,000 and to make paragraphs (a) through (g) of this clause applicable to all change orders directly related to project performance.
- (c) Audits conducted under this provision shall be in accordance with generally accepted auditing standards and with established procedures and guidelines of the reviewing or audit agency(ies).
- (d) The contractor agrees to disclose all information and reports resulting from access to records under paragraphs (a) and (b) of this clause to any of the agencies referred to in paragraph (a).
- (e) Records under paragraphs (a) and (b) above shall be maintained by the contractor during performance by EPA assisted work under this subagreement and for the time periods specified in 40 CFR Part 31. In addition, those records which relate to any controversy arising under an EPA assistance agreement, litigation, the settlement of claims arising out of such performance or to costs or items to which an audit exception has been taken shall be maintained by the contractor for the time periods specified in 40 CFR Part 31.
- (f) Access to records is not limited to the required retention periods. The authorized representatives designated in paragraphs (a) of this clause shall have access to records at any reasonable time for as long as the records are maintained.
- (g) This right of access clause applies to financial records pertaining to all subagreements (except formally advertised, competitively awarded, fixed price subagreements) and all subagreement change

- orders regardless of the type of subagreement, and all subagreement amendments regardless of the type of subagreement. In addition this right of access applies to all records pertaining to all subagreements, subagreement change orders, and subagreement amendments:
- (1) To the extent the records pertain directly to subagreement performance;
- (2) If there is any indication that fraud, gross abuse or corrupt practices may be involved; or
 - (3) If the subagreement is terminated for default or for convenience.

10. Covenant Against Contingent Fees

The contractor warrants that no person or selling agency has been employed or retained to solicit or secure this subagreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this warranty the recipient shall have the right to annul this agreement without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage brokerage, or contingent fee.

11. Gratuities

- (a) If the recipient finds after a notice and hearing that the contractor, or any of the contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise), to any official, employee, or agent of the recipient, the State, or EPA in an attempt to secure a subagreement or favorable treatment in awarding, amending, or making any determinations related to the performance of this agreement, the recipient may, by written notice to the contractor, terminate this agreement. The recipient may also pursue other rights and remedies that the law or this agreement provides. However, the existence of the facts on which the recipient bases such findings shall be in issue and may be reviewed in proceedings under the Remedies clause of this agreement.
- (b) In the event this subagreement is terminated as provided in paragraph (a) the recipient may pursue the same remedies against the contractor as it could pursue in the event of a breach of the subagreement by the contractor, and as a penalty, in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the recipient) which shall be not less than three nor more than ten times the costs the contractor incurs in providing any such gratuities to any such officer or employee.

12. Responsibility of the Contractor

- (b) The following clause applies only to subagreements for construction.
- (1) The contractor agrees to perform all work under this subagreement in accordance with this agreement's designs, drawings and specifications.
- (2) The contractor guarantees for a period of at least one (1) year from the date of substantial completion of the work that the completed work is free from all defects due to faulty materials, equipment or workmanship and he shall promptly make whatever adjustments or corrections which may be necessary to cure any defects, including repairs of any damage to other parts of the system resulting from such defects. The owner shall promptly give notice to the contractor of observed defects. In the event that the contractor fails to make adjustments, repairs, corrections or other work made necessary by such defects, the owner may do so and charge the contractor the cost incurred. The performance bond shall remain in full force and effect

through the guarantee period.

(3) The contractor's obligations under this clause are in addition to the contractor's other express or implied assurances under this subagreement or State law and in no way diminish any other rights that the owner may have against the contractor for faulty materials, equipment or work.

13. Final Payment

Upon satisfactory completion of the work performed under this agreement, as a condition before final payment under this agreement, or as a termination settlement under this agreement, the contractor shall execute and deliver to the owner a release of all claims against the owner arising under or by virtue of this agreement, except claims which are specifically exempted by the contractor to be set forth therein. Unless otherwise provided in this agreement or by State law or otherwise expressly agreed to by the parties to this agreement, final payment under this agreement or settlement upon termination of this agreement shall not constitute a waiver of the owner's claims against the contractor or his sureties under this agreement or applicable performance and payment bonds.

II NONDISCRIMINATION IN EMPLOYMENT EQUAL OPPORTUNITY CLAUSE (41 CFR 60-1.4)

Federally assisted construction contracts.

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows.

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin, such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without retard to race, color, religion, sex, or national origin.
- (3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
 - (5) The contractor will furnish all information and reports required by

Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- (6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontractor or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however*, That in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United Slates to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be boundby the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontracts by the administering agency or the Secretary of Labor pursuant to Part 11, Subpart D of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee): refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant: and refer the case to the Department of Justice for appropriate legal proceedings.

III CERTIFICATION OF NONSEGREGATED FACILITIES (41 CFR 60-1.8)

Bidders and offerors are cautioned as follows: By signing this bid or offer, the bidder or offeror will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder or offeror does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that he will not maintain such segregated facilities.

IV AFFIRMATIVE ACTION REQUIREMENTS STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

- 1. As used in these specifications:
 - "Covered area" means the geographical area described in the solicitation from which this contract resulted:
 - "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
 - d. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups no of Hispanic origin):
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- 2. Whenever the Contractor, or subcontractor at any tier, subcontract a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
- 3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an associations, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participation in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participation in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or

- Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- The contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
- 5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- 6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative actions steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 - c. Maintain a current file of the names, addresses and

- telephone numbers of each minority and female offthe-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred bach to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations: by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any joy site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior

- to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- Ensure that all facilities and company activities are nonsegregated expect that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractorcommunity, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
- 9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a

- substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
- The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- 13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- 14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
- 15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

V AFFIRMATIVE ACTION PROGRAM

The following is from 41 CFR Part 60-4, published October 3, 1980).

The minority and female goals apply to Federal and federally assisted construction contractors and subcontractors which have covered contracts. The goals are expressed as a percentage of the total hours worked by such a covered's or subcontractor's entire onsite construction workforce which is working on any construction site within a relevant area. The goal applies to each construction craft and trade in the contractor's entire workforce in the relevant area including those employees working on private nonfederally involved projects.

Until further notice, the following goals for minority utilization in

each construction craft and trade shall be included in all Federal or federally assisted construction contracts and subcontracts in excess of \$10,000 to be performed in the respective geographic area. The goals are applicable to each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or nonfederally related project, contract or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply as follows:

Economic Areas
Non-SMSA Counties
PA Pike
PENNSYLVANIA:
010 Buffalo, NY
Non-SMSA Counties 6.3
PA McKean; PA Potter
011 Binghamton, NY-PA
SMSA Counties
0960 Binghamton, NY-PA 1.1
NY Broome; NY Tioga; PA Susquehanna.
Non-SMSA Counties
PA Bradford; PA Tioga.
013 Scranton - Wilkes-Barre, PA
SMSA Counties
5745 Northeast Pennsylvania
Non-SMSA Counties
PA Columbia; PA Wayne; PA Wyoming
014 Williamsport, PA
SMSA Counties
9140 Williamsport,PA 1.0
PA Lycoming
Non-SMSA Counties 0.7
PA Cameron; PA Centre; PA Clearfield; PA Clinton; PA
Elk; PA Jefferson; PA Montour; PA Northumberland; PA
Snyder; PA Sullivan; PA Union.
015 Erie, PA
SMSA Counties
2360 Erie, PA
PA Erie
Non-SMSA Counties 1.8
PA Clarion; PA Crawford; PA Forest; PA Venango; PA
Warren.
016 Pittsburgh, PA
SMSA Counties
0280 Altoona, PA 1.0
PA Blair.
3680 Johnson, PA 1.3
PA Cambria; PA Somerset
6280 Pittsburgh, PA 6.3
PA Allegheny; PA Beaver; PA Washington; PA
Westmoreland
Non-SMSA Counties 4.8
MD Allegany; MD Garrett; PA Armstrong; PA Bedford; PA

Butler; PA Fayette; PA Greene; PA Indiana; WV Mineral

017 Harrisburg - York - Lancaster, PA	VA Salem.
SMSA Counties	Non-SMSA Counties 12.0
3240 Harrisburg, PA 6.2	VA Alleghany; VA Augusta; VA Bath; VA Bedford; VA
PA Cumberland; PA Dauphin; PA Parry	Bland; VA Carroll; VA Floyd; VA Franklin; VA Giles; VA
4000 Lancaster, PA 2.0	Grayson; VA Henry; VA Highland; VA Montomery; VA
PA Lancaster.	Nelson; VA Patrick; VA Pittsylvania; VA Pulaski; VA
9280 York, PA 2.2	Rockbridge; VA Rockingham; VA Wythe; VA Bedford
PA Adams; PA York	City; VA Buena Vista; VA Clifton Forge; VA Covington;
Non-SMSA Counties	VA Danville; VA Galex; VA Harrisonburg; VA Lexington;
PA Franklin; PA Fulton; PA Huntingdon; PA Juniata; PA	VA Martinsville; VA Radford; VA Staunton; VA Waynesboro;
Lebanon; PA Mifflin	WV Pendleton.
018 Philadelphia, PA	022 Richmond, VA
SMSA Counties	SMSA Counties
0240 Allentown - Bethlehem - Easton, PA-NJ 1.6	6140 Petersburg - Colonial Heights - Hopewell, VA 30.6
NJ Warren; PA Carbon; PA Lehigh; PA Northampton	VA Dinwiddle; VA Prince George; VA Colonial Heights;
0560 Atlantic City, NJ	VA Hopewell; VA Petersburg.
NJ Atlantic.	6760 Richmond, VA 24.9
6160 Philadelphia, PA-NJ 17.3	VA Charles City; VA Chesterfield VA Goochland; VA
NJ Burlington; NJ Camden; NJ Gloucester; PA Bucks; PA	Hanover; VA Hennco; VA New Kent; VA Powhatan; VA
Chester; PA Delaware; PA Montgomery; PA Philadelphia	Richmond.
6680 Reading, PA	Non-SMSA Counties
PA Berks	VA Albemarle; VA Amelia; VA Brunswick; VA Buckingham;
8480 Trenton, NJ 16.4	VA Caroline; VA Charlotte; VA Cumberland; VA Essox; VA
NJ Mercer	Fluvanna; VA Greene; VA Greensville; VA Halifax; VA King
8760 Vineland - Millville, Bridgeton, NJ 16.0	and Queen; VA King William; VA Lancaster; VA Louisa; VA
NJ Cumberland	Lunenberg; VA Madison; VA Mecklenburg; VA
9160 Wilmington, DE-NJ-MD 12.3	Northumberland; VA Nottoway; VA Orange; PA Prince
DE New Castle; MD Cecil; NJ Salem.	Edward; VA Richmond; VA Sussex; VA Charlottesville; VA
Non-SMSA Counties 14.5	Emporia; VA South Boston
DE Kent; DE Sussex; NJ Cape May; PA Schuylkill.	023 Norfolk - Virginia Beach - Newport News, VA
MARYLAND:	SMSA Counties
019 Baltimore, MD	5680 Newport News-Hampton, VA 27.1
SMSA Counties	VA Gloucester; VA James City; VA York; VA Hampton;
0720 Baltimore, MD 23.0	VA Newport News; VA Williamsburg
MD Anne Arundel; MD Baltimore; MD Carroll; MD Harford;	5720 Norfolk - Virginia Beach - Portsmouth
MD Howard, MD Baltimore City.	VA-NC 26.6
Non-SMSA Counties	NC Currituck; VA Chesapeake, VA Norfold; VA
MD Caroline; MD Dorchester; MD Kent; MD Queen Annes;	Portsmouth; VA Suffolk; VA Virginia Beach.
MD Somerset; MD Talbot; MD Wicomico; MD Worcester;	Non-SMSA Counties
VA Accomack, VA Northampton	VA Isle of Wight; VA Matthes; VA Middlesex; VA
WASHINGTON, DC:	Southampton, VA Surry; VA Franklin
020 Washington, DC	062 Johnson City - Kingsport - Bristol, TN-VA:
SMSA Counties:	SMSA Counties
8840 Washington, DC-MD-VA	3660 Johnson City - Kingsport - Bristol, TN-VA 2.6
DC District of Columbia; MD Charles; MD Montgomery;	TN Carter; TN Hawkins; TN Sullivan; TN Unicot; TN
MD Prince Georges; VA Arlington; VA Fairfax; VA	Washington; VA Scott; VA Washington; VA Bristol.
Loudoun; VA Prince William; VA Alexandria; VA Fairfax	Non-SMSA Counties
City; VA Falls Church	Greene; TN Hancock; TN Johnson; VA Buchanan; VA
Non-SMSA Counties	Dickensen; VA Lee; VA Russell; VA Smyth; CA Tazewell;
MD Calvert; MD Frederick; MD St. Marys; MD	VA Wise; VA Norton; WV McDowell; WV Mercer.
Washington; VA Clarke; VA Culpeper; VA Fauquier; VA	Ohio:
Frederick; VA King George; VA Page; VA Rappahannock; VA	064 Youngstown-Warren, OH:
Shenandoah; VA Spottsvylvania; VA Stafford; VA Warren;	SMSA Counties:
VA Westmoreland; VA Fredericksburg; VA Winchester; WV	9320 Youngstown-Warren, OH 9.4
Berkeley; WV Grant; WV Hampshire; WV Hardy; WV	OH Columbiana; PA Lawrence; PA Mercer;
Jefferson; WV Morgan.	
VIRGINIA:	These goals are applicable to all the Contractor's construction work
021 Roanoke-Lynchburg, VA	(whether or not it is Federal or federally assisted) performed in the
SMSA Counties;	covered area.
4640 Lynchburg, VA	The Contractor's compliance with the Executive Order and the
VA Amherst; VA Appomattox; VA Campbell; VA	regulations in 41 CFR Part 60-4 shall be based on its implementation of
Lynchburg.	the Equal Opportunity Clause, specific affirmative action obligations
6800 Roanoke, VA	required by the specifications set forth in 41 CFR 60-4.3(a), and its
VA Botetourt; VA Craig; VA Roanoke; VA Roanoke City;	efforts to meet the goals established for the geographical area where the

contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to:

Assistant Regional Administrator Office of Federal Contract Compliance 3535 Market Street Philadelphia. Pennsylvania 19104

within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, (if any).

VI REQUIRED PROVISIONS OF 40 CFR PART 31 SUBPART C

The contractor agrees that "construction" work (as defined by the Secretary of Labor) shall be subject to the following provisions to the extent applicable:

A. All contracts regardless of dollar value.

1. Patents, Data, and Copyright Clause

The contractor agrees to comply with the Environmental Protection Agency's (EPA) requirements and regulations pertaining to reporting and patent rights under any subagreement involving research, developmental, experimental or demonstration work with respect to any discovery or invention which arise or is developed in the course of or under the agreement and with EPA requirements and regulations pertaining to copyrights and rights contained in 40 CFR Part 31.

B. Contracts awarded in excess of \$10,000

Equal Employment Opportunity Clause

The contractor agrees to comply with Executive Order 11246, entitled Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Dept. of Labor regulations (41 CFR Part 60).

C. Contracts awarded in excess of \$100,000

Violating Facilities Clause

The contractor agrees to comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air (42 U.S.C. 1857 (h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and EPA regulations (40 CFR Part 15) which prohibit the award of this contract to facilities included on the EPA List of Violating Facilities. The contractor shall report violations to EPA.

VII Attachments

ATTACHMENT 1

EXTRACTS FROM THE FEDERAL REGISTER

(The following is taken from Titles 40 and 41 of the Federal Register)

Title 41 Part 60 - Office of Federal Contract Compliance Programs
Equal Employment
Opportunity, Department of Labor

Part 60-1 -- Obligations of Contractors and Subcontractors

60-1.7 Reports and other required information.

60-1.8(b) Segregated facilities.

60-1.20(d) Compliance reviews.

60-1.41 Solicitation or advertisements for employees.

60-1.42 Notices to be posted.

60-1.43 Access to records and site of employment

Title 40 Part 31 - Uniform Administration Requirements for Grants and Cooperative Agreements to State and Local Governments

Subpart C - Post-Award Requirements

31.34 Copyrights.

31.35 Subawards to debarred and suspended parties.

31.36(b) Procurement standards.

31.36(c) Competition.

31.36(e) Small and minority firms, women's business enterprise and labor surplus area firms.

31.36(h) Bonding requirements.

Note: Part 31 contains references to the Davis-Bacon Act and the "Buy American" requirements of the Clean Water Act. Notwithstanding these references, the Appropriation Act projects are not subject to these requirements.

Authority: 7 U.S.C. 136 et seq.; 15 U.S.C. 2601 et seq.; 20 U.S.C. 4011 et seq.; 33 U.S.C. 1251 et seq.; 33 U.S.C. 1401 et seq.; 42 U.S.C. 300f et seq.; 42 U.S.C. 6901 et seq.; 42 U.S.C. 7401 et seq.; 42 U.S.C. 9601 et seq

Part 60-1 -- Obligations of Contractors and Subcontractors

§60-1.7 Reports and other required information.

- (a) Requirements for prime contractors and subcontractors. (1) Each prime contractor and subcontractor shall file annually, on or before the 31st day of March, complete and accurate reports on Standard Form 100 (EEO-l) promulgated jointly by the Office of Federal Contract Compliance Programs, the Equal **Employment Opportunity Commission and** Plans for Progress or such form as may hereafter be promulgated in its place if such prime contractor or subcontractor (i) is not exempt from the provisions of these regulations in accordance with §60-1.5; (ii) has 50 or more employees; (iii) is a prime contractor or first-tier subcontractor; and (iv) has a contract, subcontract or purchase order amounting to \$50,000 or more or serves as a depository of Government funds in any amount, or is a financial institution which is an issuing and paying agent for U.S. savings bonds and savings notes: Provided, That any subcontractor below the first-tier which performs construction work at the site of construction shall be required to file such a report if it meets requirements of paragraphs (a)(1)(i), (ii), and (iv) of this section.
- (2) Each person required by \$60-1.7(a)(1) to submit reports shall file such a report with the contracting or administering agency within 30 days after the award to him of a contract or subcontract, unless such person has submitted such a report within 12 months preceding the date of the award. Subsequent reports shall be submitted annually in accordance with \$60-1.7(a)(1), or at such other intervals as the Director may require. The Director may extend the time for filing any report.
- (3) The Director or the applicant, on their own motions, may require a contractor to keep employment or other records and to furnish, in the form requested, within reasonable limits, such information as the Director or the applicant deems necessary for the administration of the order.
- (4) Failure to file timely, complete and accurate reports as required constitutes noncompliance with the prime contractor's or subcontractor's obligations under the equal opportunity clause and is ground for the imposition by the Director, an applicant, prime contractor or subcontractor, of any sanctions as authorized by the order and the regulations in this part.
- (b) Requirements for bidders or

- prospective contractors--(1) Certification of compliance with Part 60-2: Affirmative Action Programs. Each agency shall require each bidder or prospective prime contractor and proposed subcontractor, where appropriate, to state in the bid or in writing at the outset of negotiations for the contract:
- (i) Whether it has developed and has on file at each establishment affirmative action programs pursuant to Part 60-2 of this chapter; (ii) whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; (iii) whether it has filed with the Joint Reporting Committee, the Director of the Equal Employment Opportunity Commission all reports due under the applicable filing requirements.
- (2) Additional information. A bidder or prospective prime contractor or proposed subcontractor shall be required to submit such information as the Director requests prior to the award of the contract or subcontract. When a determination has been made to award the contract or subcontract to a specific contractor, such contractor shall be required, prior to award, or after the award, or both, to furnish such other information as the applicant or Director requests.
- (c) Use of reports. Reports filed pursuant to this section shall be used only in connection with the administration of the order, the Civil Rights Act of 1964, or in furtherance of the purposes of the order and said Act.

§60-1.8 Segregated facilities.

(b) Certification by prime contractors or subcontractors. Prior to the award of any nonexempt Government contract or subcontract or federally assisted construction contract or subcontract, each agency or applicant shall require the prospective prime contractor and each prime contractor and subcontractor shall require each subcontractor to submit a certification, in the form approved by the Director, that the prospective prime contractor or subcontractor does not and will not maintain any facilities he provides for his employees in a segregated manner, or permit his employees to perform their services at any location under his control, where segregated facilities are maintained; and that he will obtain a similar certification in the form approved by the Director prior to the award of any nonexempt subcontract.

§60-1.20 Compliance reviews.

(d) Each agency shall include in the in the invitation for bids for each formally advertised nonconstruction contract or state at the outset of negotiations for each

negotiated contract, that if the award, when let, should exceed the amount of \$1 million or more, the prospective contractor and his known first-tier subcontractors with subcontracts of \$1 million or more will be subject to a compliance review before the award of the contract. No such contract shall be awarded unless a preaward compliance review of the prospective contractor and his known first tier \$1 million subcontractors has been conducted within 12 months prior to the award. The awarding agency will notify OFCCP and request appropriate action and findings in accordance with this subsection. OFCCP will provide awarding agencies with written reports of compliance within 30 days following the request. In order to qualify for the award of a contract, a contractor and such first-tier subcontractors must be found to be in compliance pursuant to paragraph (b) of this section, and with Part 60-2 of these regulations.

§60-1.41 Solicitations or advertisements for employees.

In solicitations or advertisements for employees placed by or on behalf of a prime contractor or subcontractor, the requirements of paragraph (2) of the equal opportunity clause shall be satisfied whenever the prime contractor or subcontractor complies with any of the following:

- (a) States expressly in the solicitations or advertising that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin;
- (b) Uses display or other advertising, and the advertising includes an appropriate insignia prescribed by the Director. The use of the insignia is considered subject to the provisions of 18 U.S.C. 701;
- (c) Uses a single advertisement, and the advertisement is grouped with other advertisements under a caption which clearly states that all employers in the group assure all qualified applicants equal consideration for employment without regard to race, color, religion, sex, or national origin;
- (d) Uses a single advertisement in which appears in clearly distinguishable type the phrase "an equal opportunity employer."

§60-1.42 Notices to be posted.

(a) Unless alternative notices are prescribed by the Director, the notices which prime contractors and subcontractors are required to post by paragraphs (1) and (3) of the equal opportunity clause will contain the following language and will be

provided by the contracting or administering agencies:

EQUAL EMPLOYMENT OPPORTUNITY IS THE LAW -- DISCRIMINATION IS PROHIBITED BY THE CIVIL RIGHTS ACT OF 1964 AND BY EXECUTIVE ORDER 11246

Title VII of the Civil Rights Act of 1964 -- Administered by:

THE EQUAL EMPLOYMENT OPPORTUNITY COMMISSION

Prohibits discrimination because of Race, Color, Religion, Sex, or National Origin by Employers with 75 or more employees, by Labor Organizations with a hiring hall of 75 or more members, by Employment Agencies, and by Joint Labor-Management Committees for Apprenticeship and Training. After July 1, 1967, employers and labor organizations with 50 or more employees or members will be covered; after July 1, 1968, those with 25 or more will be covered.

ANY PERSON

Who believes he or she has been discriminated against

Should Contact

THE EQUAL EMPLOYMENT OPPORTUNITY COMMISSION

2401 E Street NW, Washington, D.C. 20506

Executive Order No. 11246 -- Administrative by:

THE OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS

Prohibits discrimination because of Race, Color, Religion, Sex, or National Origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

By all Federal Government Contractors and Subcontractors and by Contractors Performing Work Under a Federally Assisted Construction Contract, regardless of the number of employees in either case.

ANY PERSON

Who believes he or she has been discriminated against

Should Contact

THE OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS

U.S. Department of Labor Washington, D.C. 20210

(b) The requirements of paragraph (3) of the equal opportunity clause will be satisfied whenever the prime contractor or subcontractor posts copies of the notification prescribed by or pursuant to paragraph (a) of this section in conspicuous places available to employees, applicants for employment, and representatives of each labor union or other organization representing his employees with which he has a collective-bargaining agreement or other contract or understanding.

§60-1.43 Access to records and site of employment.

Each prime contractor and subcontractor shall permit access during normal business hours to its premises for the purpose of conducting on-site compliance reviews and inspecting and copying such books, records, accounts, and other material as may b relevant to the matter under investigation and pertinent to compliance with the order, and the rules and regulations promulgated pursuant thereto by the agency, or the Director. Information obtained in this manner shall be used only in connection with the administration of the order, the administration of the Civil Rights Act of 1964 (as amended) and in furtherance of the purposes of the order and that Act. (See 41 CFR Part 60-60, Contractor Evaluation Procedures for Nonconstruction Contractors; 41 CFR Part 60-40, Examination and Copying of OFCCP Documents.)

Subpart C -- Post-Award Requirements

§31.34 Copyrights.

The Federal awarding agency reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for Federal Government purposes:

- (a) The copyright in any work developed under a grant, subgrant, or contract under a grant or subgrant; and
- (b) Any rights of copyright to which a grantee, subgrantee or a contractor purchases ownership with grant support.

§31.35 Subawards to debarred and suspended parties.

Grantees and subgrantees must not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549, "Debarment and Suspension."

§31.36 Procurement.

- (b) Procurement standards. (1) Grantees and subgrantees will use their own procurement procedures which reflect applicable State and local laws and regulations, provided that the procurement conform to applicable Federal law and the standards identified in this section.
- (2) Grantees and subgrantees will maintain a contract administration system which ensures that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.
- (3) Grantees and subgrantees will maintain a written code of standards of conduct governing the performance of their employees engaged in the award and administration of contracts. No employee, officer or agent of the grantee or subgrantee shall participate in selection, or in the award or administration of a contract supported by Federal funds if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when:
- (i) The employee, officer or agent,
- (ii) Any member of his immediate family,
- (iii) His or her partner, or
- (iv) An organization which employs, or is about to employ, any of the above, has a financial or other interest in the firm selected for award. The grantee's or subgrantee's officers, employees or agents will neither solicit nor accept gratuities, favors or anything of monetary value from contractors, potential contractors, or parties to subagreements. Grantee and subgrantees may set minimum rules where the financial interest is not substantial or the gift is an unsolicited item of nominal intrinsic value. To the extent permitted by State or local law or regulations, such standards or conduct will provide for penalties, sanctions, or other disciplinary actions for violations of such standards by the grantee's and subgrantee's officers, employees, or agents, or by contractors or their agents. The awarding agency may in regulation provide additional prohibitions relative to real. apparent, or potential conflicts of interest.
- (4) Grantee and subgrantee procedures will provide for a review of proposed

- procurement to avoid purchase of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.
- (5) To foster greater economy and efficiency, grantees and subgrantees are encouraged to enter into State and local intergovernmental agreements for procurement or use of common goods and services.
- (6) Grantees and subgrantees are encouraged to use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs.
- (7) Grantees and subgrantees are encouraged to use value engineering dauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.
- (8) Grantees and subgrantees will make awards only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.
- (9) Grantees and subgrantees will maintain records sufficient to detail the significant history of a procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.
- (10) Grantees and subgrantees will use time and material type contracts only-
- (i) After a determination that no other contract is suitable, and
- (ii) If the contract includes a ceiling price that the contractor exceeds at its own risk.
- (11) Grantees and subgrantees alone will be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to source evaluation, protests, disputes, and claims. These standards do not relieve the grantee or subgrantee of any contractual responsibilities under its contracts. Federal agencies will not substitute their judgment for that of the grantee or subgrantee unless the matter is primarily a Federal concern.

- Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction.
- (12) Grantees and subgrantees will have protest procedures to handle and resolve disputes relating to their procurements and shall in all instances disclose information regarding the protest to the awarding agency. A protestor must exhaust all administrative remedies with the grantee and subgrantee before pursuing a protest with the Federal agency. Reviews of protests by the Federal agency will be limited to:
- (i) Violations of Federal law or regulations and the standards of this section (violations of State or local law will be under the jurisdiction of State or local authorities) and
- (ii) Violations of the grantee's or subgrantee's protest procedures for failure to review a complaint or protest. Protests received by the Federal agency other than those specified above will be referred to the grantee or subgrantee.
- (c) Competition. (1) All procurement transactions will be conducted in a manner providing full and open competition consistent with the standards of §31.36. Some of the situations considered to be restrictive of competition include but are not limited to:
- (i) Placing unreasonable requirements on firms in order for them to qualify to do business,
- (ii) Requiring unnecessary experience and excessive bonding,
- (iii) Noncompetitive pricing practices between firms or between affiliated companies.
- (iv) Noncompetitive awards to consultants that are on retainer contracts,
- (v) Organizational conflicts of interest,
- (vi) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance of other relevant requirements of the procurement, and
- (vii) Any arbitrary action in the procurement process.
- (2) Grantees and subgrantees will conduct procurements in a manner that prohibits the use of statutorily or administratively imposed in-State or local geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts State licensing laws. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criteria provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.
- (3) Grantees will have written selection

- procedures for procurement transactions. These procedures will ensure that all solicitations:
- (i) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description shall not, in competitive procurements, contain features which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured, and when necessary, shall set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a "brand name or equal" description may be used as a means to define the performance or other salient requirements of a procurement. The specific features of the named brand which must be met by offerors shall be clearly stated; and
- (ii) Identify all requirements which the offerors must fulfill and all other factors to be used in evaluating bids or proposals.
- (4) Grantees and subgrantees will ensure that all prequalified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough qualified sources to ensure maximum open and free competition. Also, grantees and subgrantees will not preclude potential bidders from qualifying during the solicitation period.
- (5) Construction grants awarded under Title II of the Clean Water Act are subject to the following "Buy American" requirements in paragraphs (c)(5)(i)-(iii) of this section. Section 215 of the Clean Water Act requires that contractors give preference to the use of domestic material in the construction of EPA-funded treatment works.
- (i) Contractors must use domestic construction materials in preference to nondomestic material if it is priced no more than 6 percent higher than the bid or offered price of the nondomestic material, including all costs of delivery to the construction site and any applicable duty, whether or not assessed. The grantee will normally base the computations on prices and costs in effect on the date of opening bids or proposals.
- (ii) The award official may waive the Buy American provision based on factors the award official considers relevant, including:
- (A) Such use is not in the public interest;
- (B) The cost is unreasonable;
- (C) The Agency's available resources are not sufficient to implement the provision, subject to the Deputy Administrator's concurrence;
- (D) The articles, materials or supplies of

- the class or kind to be used or the articles, materials or supplies from which they are manufactured are not mined, produced or manufactured in the United States in sufficient and reasonably available commercial quantities or satisfactory quality for the particular project; or
- (E) Application of this provision is contrary to multilateral government procurement agreements, subject to the Deputy Administrator's concurrence.
- (iii) All bidding documents, subagreements, and, if appropriate, requests for proposals must contain the following "Buy American" provision: In accordance with section 215 of the Clean Water Act (33 U.S.C. 1251 et seq.) and implementing EPA regulations, the contractor agrees that preference will be given to domestic construction materials by the contractor, subcontractors, materialmen and suppliers in the performance of this subagreement.
- (e) Contracting with small and minority firms, women's business enterprise and labor surplus area firms. (1) The grantee and subgrantee will take all necessary affirmative steps to assure that minority firms, and women's business enterprises, and labor surplus area firms are used when possible

- (2) Affirmative steps shall include:
- (i) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (ii) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- (iii) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
- (iv) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;
- (v) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and
- (vi) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (e)(2)(i) through (v) of this section.
- (h) Bonding requirements. For construction or facility improvement contracts or subcontracts exceeding \$100,000, the awarding agency may accept the bonding policy and requirements of the grantee or

- subgrantee provided the awarding agency has made a determination that the awarding agency's interest is adequately protected. If such a determination has not been made, the minimum requirements shall be as follows:
- (1) A bid "guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.
- (2) A performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.
- (3) A payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

Copies of the following notice will be posted in conspicuous places available to employees or applicants for employment:

(Contractor or Subcontractor)

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to contracts, subcontracts, and agreements with Applicants who are themselves performing federally assisted construction contracts, exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certificate, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation and entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files, and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods).

(Signature)	(Date)
(Name and Title of Sign	ner - Please Type)

SPECIAL CONDITIONS - CONTRACT INSERTS

The following document is to be inserted "verbatim" in all construction contracts. The contract insert contains 8 subparts and 2 attachments as follows:

- 1. <u>Subpart A</u> containing the Federal/State Nondiscrimination Provisions for Equal Employment Opportunities applicable to all construction and service contracts.
- 2. <u>Subpart B</u> containing the notice to the prime contractor relative to certification on nonsegregational facilities.
- 3. <u>Subpart C</u> setting forth the affirmative action requirements for the contractors and subcontractors for work involving any construction trade in excess of \$10,000.
- 4. Subpart D containing the Civil Rights Act of 1964.
- 5. <u>Subpart E</u> setting forth requirements of Age Discrimination of 1975, Rehabilitation Act of 1973, and Section 13 of PL 92-500, the Federal Water Pollution Control Act.
- 6. <u>Subpart F</u> setting forth requirements under Section 306 of the Clean Air Act and Section 508 of the Clean Water Act for contracts and subcontracts in excess of \$100,000.
- 7. <u>Subpart G</u> Procurement of goods and materials from Small Businesses in Rural Areas of the Commonwealth of Virginia wherever practical and feasible.
- 8. <u>Subpart H</u> Provides that a contractor maintains a drug-free workplace or subcontractor during the performance of contract duties for any wastewater revolving loan-assisted project.

Attachment No. 1 - Certification regarding EEO compliance

Attachment No. 2 - MBE/WBE Utilization Report

SUBPART A

EQUAL EMPLOYMENT OPPORTUNITY

- 1. Executive Order 11246 (Contracts/subcontracts above \$10,000)
 - (a) During the performance of this contract, the contractor and all subcontractors agree as follows:
 - (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
 - (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
 - (3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or the other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
 - (4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
 - (5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
 - (6) In the event of the contractors' noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
 - (7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

SUBPART B

NOTICE TO PRIME CONTRACTOR OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

Bidders and offerors are cautioned as follows: By signing this bid or offer, the bidder or offeror will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder or offeror does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a defactor basis. The certification also provides that he will not maintain such segregated facilities.

SUBPART C

CONSTRUCTION CONTRACTORS AFFIRMATIVE ACTION REQUIREMENTS

- 1. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the affirmative action goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
- 2. The applicable Minority Business Enterprise (MBE)/Women's Business Enterprise (WBE) "fair share" goals and dollar objectives for Virginia's Wastewater Revolving Loan Fund projects are established as follows:

	<u>MBE%</u>		WBE%
Construction	2.6		1.5
Equipment	0.3	:	1.7
Services	1.9		0.8
Supplies	0.8		0.6

- 3. The MBE/WBE goals set forth in this contract are shown in #2 above. The Contractor shall make every reasonable attempt to achieve the goals as stated. When so notified by the owner, the apparent low bidder shall provide a listing of MBE's and WBE's he proposes to use on this project. Should the bidder fail to meet the aforementioned objectives he shall provide complete documentation which demonstrates the positive efforts made. Failure to satisfy this requirement to the satisfaction of the owner shall constitute a nonresponsible bid and shall be cause for the owner to reject the bid.
- 4. The contractor shall implement the specific affirmative action steps identified in the <u>Instruction to Bidders/Offerors</u> section of these specifications.
- 5. The Contractor and all Subcontractors must maintain documentation and records of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations. Within 21 days of determination of the apparent low bidder, the contractor must furnish to the loan recipient all pertinent documentation, which evidences or documents a good faith effort in MBE/WBE solicitation and projected utilization. Failure to comply with the submission of appropriate MBE/WBE documentation may result in the determination of a bidder as nonresponsible and shall cause for the bid to be rejected.
- 6. Immediately following the award of contracts and continuing through the construction stage, all records of MBE/WBE utilization shall be maintained and reported in accordance with the Virginia Revolving Loan Fund MBE/WBE Utilization Reporting Form. A MBE/WBE Utilization Reporting Form shall be completed and submitted to the loan recipient on a calendar year quarterly basis during the construction period.

SUBPART D

CIVIL RIGHTS ACT OF 1964

The Contractor and any subcontractors shall not, on the grounds of race, color, or national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination, any person under any program or activity receiving federal financial assistance.

SUBPART E

SECTION 13 of PL 92-500; UNDER THE FEDERAL WATER POLLUTION CONTROL ACT; REHABILITATION ACT OF 1973; PL 93-112, AND AGE DISCRIMINATION ACT OF 1975

The Contractor and any subcontractors shall not on the grounds of race, color, national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination any person under any program or activity funded in whole or in part with Federal funds. Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 shall also apply to any such program or activity.

SUBPART F

COMPLIANCE WITH SECTION 306 OF THE CLEAN AIR ACT AND SECTION 508 OF THE CLEAN WATER ACT

(CONTRACTS AND SUBCONTRACTS IN EXCESS OF \$100,000)

The Contractor agrees that:

- 1. Any facility to be utilized in the performance of this contract or any subcontract shall not be a facility listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20.
- 2. The Contractor and Subcontractors will comply with all requirements of Section 306 of the Clean Air Act, as amended, and Section 508 of the Clean Water Act, as amended, and all regulations and guidelines issued thereunder.
- 3. The Contractor will promptly notify the loan recipient and Department of Environmental Quality of any notification received from the Director of the Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

SUBPART G

UTILIZATION OF SMALL BUSINESSES IN RURAL AREAS

The contractor and its subcontractors shall maintain a small business solicitation list and make appropriate attempts to procure needed equipment, supplies and material from small businesses in rural areas of the Commonwealth of Virginia whenever they are a practical source for solicitation.

SUBPART H

SECTION 11-51.1, to CHAPTER 417 RELATING TO THE PROCUREMENT PRACTICES OF ALL PUBLIC BODIES

For every contract over \$10,000 the contractor must maintain a drug-free workplace. During the performance of this contract, the contractor agrees to (I) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

Instruction to Bidders/Offerors

Minority Business and Women's Business Enterprise (MBE/WBE) Requirements of 40 CFR 33.240

Bidder/Offeror Responsibilities

- A. Affirmative Steps: Activities during preparation of bids and offers. Bidders/offerers shall take affirmative steps in compliance with the regulations, prior to submission of bids or closing data for receipt of initial offers, to encourage participation in projects by MBE and WBE firms. Such efforts include:
 - 1. Establish and maintain a current solicitation list of minority and female recruitment sources, and assure MBE and WBE firms are solicited once they are identified.
 - 2. When feasible, segmenting total work requirements to permit maximum MBE/WBE participation and establish delivery schedules to encourage MBE/WBE participation.
 - 3. Assuring that MBE and WBE firms are solicited whenever they are potential sources of goods and services. This step may include:
 - a. Sending letters or making other personal contact with MBE and WBE firms, private agencies and state associations (e.g., whose names appear on lists prepared by EPA or the recipient and other MBE/WBE known to the bidder/Offeror). MBE and WBE firms should be contacted when other potential subcontractors are contacted, within reasonable time prior to bid submission or closing date for receipt of initial offers. Those letters or other contacts should communicate the following:
 - (i) Specific description of the work to be contracted;
 - (ii) How and where to obtain a copy of plans and specifications or other detailed information needed to prepare a detailed price quotation;
 - (iii) Date the quotation is due to the bidder/Offeror;
 - (iv) Name, address, and phone number of the person in the bidder/Offeror's firm whom the prospective MBE/WBE subcontractor should contact for additional information.
 - b. Using the services and assistance of the Small Business Administration and the Office of Minority Business Enterprises of the U.S. Department of Commerce.
 - B. Bidders/Offerors must demonstrate compliance with MBE/WBE requirements to be deemed responsible. Demonstration of compliance may include the following information; however, the recipient may specify other methods of demonstrating compliance:
 - 1. Names, addresses and phone numbers of MBE/WBE firms expected to perform work;
 - 2. Work to be performed by the MBE and WBE firms;
 - 3. Aggregate dollar amount of work to be performed by MBE and WBE firms, showing aggregate to MBE's and aggregate to WBE's separately;

- 4. Description of contacts to MBE and WBE organizations, agencies and associations which service MBE/WBE firms, including names of organizations, agencies and associations and dates of contacts;
- 5. Descriptions of contacts to MBE and WBE firms, including number of contacts, fields (i.e., equipment or material supplier, excavators, transport services, electrical subcontractors, plumbers, etc.) and dates of contacts.
- C. Successful bidders/Offerors should take reasonable affirmative steps to subcontract with MBE and WBE firms whenever additional subcontracting opportunities arise during the performance of the contract.

BIDDER COMPLIANCE STATEMENT/CERTIFICATION REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Applicability: Bid exceeding ten thousand dollars for construction contract/subcontract of unlimited amount and non-construction contract/subcontract of less than one million dollars. This statement relates to a proposed (contract between and Public Body) or (contractor) (subcontract between (contractor) (subcontractor) funded under a federally assisted project. Pursuant to Executive Order 11246 and its implementing regulations at 41 CFR 60-1.7(b)(1), as the undersigned bidder, I certify that: 1) Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause. Yes 2) Bidder has developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-2 (applies only to non-construction contractor). Yes No 3) Bidder has filed with the Joint Reporting Committee, the Director (Office of Federal Contract Compliance Programs, U.S. Department of Labor), and agency, or the Equal Employment Opportunity Commission, all reports due under the applicable filing requirements. Yes ____No I understand that if I have failed to file any compliance reports which have been required of me, or have failed to develop and have on file at each establishment affirmative action programs pursuant to 41 CFR 60-2, when required, I am not eligible to have my bid or proposal considered, or to enter into the proposed contact. I further understand that if awarded the proposed contract, and the contract for the FIRST time brings me under the filing requirements or the written affirmative action programs that I will, as applicable: (a) within 30 days file with the Public Body Standard Form 100 (EEO-1); and (b) within 120 days from the commencement of the contract develop and submit to the Director of OFCCP for approval a Written Affirmative Action Plan. NAME AND ADDRESS OF BIDDER (Include ZIP Code): NAME AND TITLE OF SIGNER (Please Type):

DATE:

SIGNATURE:

VIRGINIA REVOLVING LOAN FUND

PART I - MBE/WBE UTILIZATION REPORTING

Send completed form to: Department of Environmental Quality, Construction

Assistance Program, P.O. Box 10009, Richmond, Virginia 23240.

Reporting contact is Kathy Maybee; phone number is (804) 698-4139

Fax number is: 698-4136

rear 20					
Reporting Quarter: (check one)					
1st (OctDec.) 3rd (AprJun.)	2nd (JanM 4th (JulSep	ar.) ot.)			
Name of Loan Recipient:	· .				
Loan Recipient Project No.:	- Marine				
Prime Contractor:					
Contract Number:					
Date for Start of Construction:	in.				
		4			
Is the Prime Contractor an MBE or WBE	? Yes	No			
Have you subcontracted with an MBE or	WBE firm in this quarter?	i i			
	Yes	No			
Please sign and date below.					
And, if you answered yes to subcontracti the second page.	ng with an MBE or WBE firr	n please <u>pro</u>	vide that infor	mation on Pa	<u>rt II</u> on
Contractor's Signature or (Recipient's sig	gnature if prime contractor is	s an MBE\W	BE firm)		
Date		_			
If an MBE/WBE subcontract is rescinded	I, please give name of firm,	date of resc	ission and am	ount of rescis	sion.

PART II - MBE/WBE UTILIZATION REPORTING

Quarter	Name and Address of MBE/WBE Contractor or Vendor						
	Type of Product or Service ¹						
Year	Date of Award (mm/dd/yy)				·		
	Dollar Value of Procurement						
Project No.	Business Enterprise	Women					
		Minority					

¹ Type of product or use service code below:

1=Agriculture 2=Mining 3=Construction 4=Manufacturing

5=Transportation 6=Wholesale Trade 7=Retail Trade 8=Finance, Insurance, Real Estate

9=Services a=Business Services b=Professional Services c=Repair Services d=Personal Services

10=Other

DRAWING INDEX

SHEET	DESCRIPTION	STATION RANGE
01	COVER SHEET - PIGEON CREEK PHASE II-B	ALL
02	SANITARY SEWER INTERCEPTOR REPLACEMENT	10+00 TO 25+00
.03	SANITARY SEWER INTERCEPTOR REPLACEMENT	25+00 TO 40+00
04	SANITARY SEWER INTERCEPTOR REPLACEMENT	40+00 TO 55+00
05	SANITARY SEWER INTERCEPTOR REPLACEMENT	55+00 TO 70+00

END OF DRAWING INDEX

SECTION 01000 - GENERAL REQUIREMENTS

1. GENERAL

1.01 SUMMARY OF WORK

- A. WORK COVERED BY THE CONTRACT DOCUMENTS CONSISTS OF PROVIDING ALL WORK INDICATED ON DRAWINGS OR REQUIRED BY PROJECT MANUAL DATED APRIL 30, 2003 FOR REPLACEMENT OF PIGEON CREEK INTERCEPTOR PHASE II-B.
- B. UNFORESEEN UNIDENTIFIED ARCHEOLOGICAL OR CULTURAL RESOURCES: IF PREVIOUSLY UNIDENTIFIED ARCHEOLOGICAL OR CULTURAL RESOURCES ARE ENCOUNTERED DURING STRUCTURAL OR TRENCH EXCAVATION, THE CONTRACTOR SHALL STOP WORK IN THAT AREA IMMEDIATELY AND NOTIFY THE OWNER'S REPRESENTATIVE, THE WILEY & WILSON CONSTRUCTION ADMINISTRATOR, AND THE WILEY & WILSON PROJECT MANAGER. ARCHEOLOGICAL RESOURCES WILL GENERALLY INCLUDE BUT NOT BE LIMITED TO SIGNIFICANT CULTURAL LAYERS CONTAINING CONCENTRATIONS OF BONES, ARTIFACTS, WOODEN OR MASONRY STRUCTURES ALL IN CONSOLIDATED SOILS. IF THE UNIDENTIFIED RESOURCES ARE DEEMED SIGNIFICANT AND REQUIRE STOPPAGE OF WORK AT THE LOCATION FOR MORE THAN 4 HOURS, THE CONTRACTOR WILL BE PAID FOR EQUIPMENT AND PERSONNEL THAT MUST REMAIN IDLE. THE OWNER WILL MAKE EVERY EFFORT TO ALLOW THE CONTRACTOR TO MOVE TO ANOTHER LOCATION ON THE PROJECT AND CONTINUE WORK UNTIL THIS ISSUE IS RESOLVED.
- C. IF SOILS CONTAMINATED BY PETROLEUM ARE DISCOVERED DURING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT WILEY & WILSON IMMEDIATELY.
- D. IF SOILS CONTAMINATED BY HAZARDOUS MATERIALS ARE DISCOVERED DURING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT WILEY & WILSON IMMEDIATELY.
- E. THE CONTRACTOR SHALL COMPLETE WORK IN A LOGICAL SEQUENCE TO MINIMIZE DISRUPTION TO RESIDENTS IN THE PROJECT AREA. WORK SHALL BE SEQUENCED TO LIMIT CONSTRUCTION TRAFFIC TRAVELING ON REINSTATED AREAS.
- F. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OR FLOW DIVERSION THROUGH TEMPORARY GRAVITY LINES AS APPROPRIATE TO ENABLE REPLACEMENT OF THE EXISTING SEWER, NO OVERFLOWS FROM BYPASSING OPERATIONS WILL BE PERMITTED.

1.02 PAYMENT

A. APPLICATIONS FOR PAYMENT

(1) EACH APPLICATION FOR PAYMENT SHALL CONSIST OF THE FOLLOWING FORMS:

AIA DOCUMENT G702 ENTITLED, "APPLICATION AND CERTIFICATE FOR PAYMENT" OR SIMILAR APPROVED FORM.

AIA DOCUMENT G703 ENTITLED, "CONTINUATION SHEET."

INVOICES FOR STORED MATERIALS. (PAYMENT FOR STORED MATERIAL DELIVERED BUT NOT INCORPORATED INTO THE WORK WILL BE THE INVOICED AMOUNT ONLY.)

CITY OF LYNCHBURG DBE USAGE STATUS FORM.

REVISED CONSTRUCTION SCHEDULE.

REVISED DISBURSEMENT OF FUNDS SCHEDULE.

(2) EACH APPLICATION FOR PAYMENT BY THE CONTRACTOR, EXCLUDING THE FIRST SHALL ALSO INCLUDE:

AIA DOCUMENT G706 ENTITLED, "CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS."

SUBMISSION OF UP-TO-DATE AS-INSTALLED MARK-UP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL.

- (3) MONTHLY PARTIAL PAYMENT REQUEST SHALL BE SUBMITTED TO WILEY & WILSON FOR APPROVAL BY THE 25TH OF THE MONTH SO THAT THE OWNER CAN RECEIVE THE APPROVED PAYMENT REQUEST BY THE FIRST WORKING DAY OF THE NEXT MONTH.
- (4) THE OWNER WILL MAKE PARTIAL PAYMENTS TO THE CONTRACTOR ON THE LAST BUSINESS DAY OF THE MONTH BY CHECK VIA FIRST CLASS MAIL THROUGH THE U. S. POSTAL SERVICE FOR A DULY CERTIFIED AND APPROVED ESTIMATE OF WORK PERFORMED DURING THE PRECEDING CALENDAR MONTH BY THE CONTRACTOR.
- (5) THE OWNER SHALL PAY TO THE CONTRACTOR 95 PERCENT OF THE TOTAL AMOUNT DUE AND THE OWNER SHALL RETAIN 5 PERCENT OF THE AMOUNT DUE UNTIL FINAL COMPLETION AND ACCEPTANCE OF ALL WORK COVERED BY THE CONTRACT.
- (6) THE OWNER WILL WITHHOLD MONTHLY PAYMENT OR PORTIONS THEREOF FOR WORK WHICH FAILS TO COMPLY WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS, INCLUDING COMPLIANCE WITH THE MINIMUM STANDARDS OUTLINED IN THE LATEST EDITION OF THE VIRGINIA EROSION CONTROL HANDBOOK. FAILURE TO MAINTAIN EROSION AND SEDIMENT CONTROL THROUGHOUT THE PROJECT, INCLUDING THE PROJECT WARRANTY PERIOD, IN COMPLIANCE WITH THESE STANDARDS AS DETERMINED BY THE OWNER OR DESIGNATED REPRESENTATIVE, SHALL RESULT IN DENIAL OF PAY REQUESTS OR PORTIONS THEREOF UNTIL ALL MEASURES HAVE BEEN BROUGHT INTO COMPLIANCE. PAYMENT WILL BE WITHHELD UNTIL THE PROJECT IS DETERMINED BY THE OWNER, OR DESIGNATED REPRESENTATIVE, TO BE IN COMPLIANCE WITH VIRGINIA EROSION CONTROL REGULATIONS. PAYMENT WILL BE RELEASED WITH THE NEXT NORMAL MONTHLY REIMBURSEMENT FOLLOWING COMPLIANCE; NO INTERMEDIATE PAYMENTS WILL BE MADE. WITHHOLDING PAYMENT WILL NOT RELIEVE THE CONTRACTOR OF HIS LEGAL RESPONSIBILITY TO COMPLY WITH THE STATE AND LOCAL EROSION CONTROL REGULATIONS, INCLUDING LIABILITY FOR ANY FINES OR PENALTIES OUTLINED THEREIN.

B. CHANGE ORDER PROCEDURES

(1) NO AMOUNT, IN PART OR IN WHOLE, OF A CHANGE ORDER SHALL BE INCLUDED IN A REQUISITION FOR PAYMENT BY THE CONTRACTOR UNTIL THE CHANGE ORDER HAS BEEN EXECUTED AND COPIES OF THE CHANGE ORDER HAVE BEEN DISTRIBUTED TO THE OWNER AND CONTRACTOR.

- (2) WORK ORDERS: A WORK ORDER IS A DEVICE WHICH ENABLES THE OWNER TO PROMPTLY ORDER CHANGES IN COST OR CONTRACT TIME, OR BOTH, PENDING PREPARATION AND EXECUTION OF A FORMAL CHANGE ORDER.
- (3) CHANGE NOTICE: THE OWNER MAY REQUEST THE CONTRACTOR TO SUBMIT A CHANGE ORDER PROPOSAL FOR CHANGES IN CONTRACT WORK. THE CONTRACTOR SHALL SUBMIT THE PROPOSAL IN ACCORDANCE WITH CONTRACT REQUIREMENTS WITHIN A REASONABLE TIME. THE OWNER MAY ISSUE TO THE CONTRACTOR A WORK ORDER AUTHORIZING THE REQUIRED CHANGES FOR AN ADDITIONAL AMOUNT NOT TO EXCEED, OR A DEDUCTION OF NOT LESS THAN, THE AMOUNT SHOWN IN THE WORK ORDER. IF THE CONTRACTOR IS NOT IN AGREEMENT WITH THE AMOUNT STIPULATED IN THE WORK ORDER, HE SHALL, WITHIN A REASONABLE TIME AFTER THE ISSUE DATE OF THE ORDER, SUBMIT AN EQUITABLE PROPOSAL AND DEVELOP WITH THE OWNER A MUTUALLY ACCEPTABLE PRICE FOR THE REQUIRED CHANGE IN WORK.
- (4) CHANGE ORDER PROPOSAL: WITHOUT FURTHER REQUEST AND WITHIN A REASONABLE TIME FROM THE ISSUE DATE OF A WORK ORDER, THE CONTRACTOR SHALL SUBMIT A WRITTEN CHANGE ORDER PROPOSAL COVERING THE WORK AUTHORIZED IN THE WORK ORDER SO THAT A CHANGE ORDER MAY BE PREPARED FOR EXECUTION.

1.03 COORDINATION

- A. PHASES OF THE CONSTRUCTION WHICH INVOLVE THE TEMPORARY INTERRUPTION OF ESSENTIAL SERVICES SHALL BE SCHEDULED IN CONSULTATION WITH THE OWNER OR HIS REPRESENTATIVE AT LEAST 5 WORKING DAYS IN ADVANCE AND SHALL NOT BE OF LONGER DURATION THAN ESSENTIAL TO ACCOMPLISH THE PURPOSE FOR SUCH INTERRUPTIONS. LIAISON WITH OWNER IN THIS MATTER SHALL BE A SALIENT FEATURE OF THIS CONTRACT.
- B. ANY WATER OR SEWER SERVICE CONNECTION WORK THAT IS PERFORMED BY THE CONTRACTOR MUST BE DONE BY A CERTIFIED PLUMBER.
- 1.04 FIELD ENGINEERING: WILEY & WILSON SHALL PROVIDE REFERENCE POINTS ON THE DRAWINGS FROM WHICH THE CONTRACTOR SHALL LAY OUT THE WORK. THE CONTRACTOR SHALL STAKE OUT THE ALIGNMENT OF THE ACTUAL CENTERLINE USING OFFSET STAKES. THE CONTRACTOR SHALL PROTECT AND PRESERVE ALL REFERENCE POINTS AND OFFSET STAKES AND REPLACE SAME AT NO ADDITIONAL COST IF THEY ARE DESTROYED. THE CONTRACTOR SHALL PROVIDE A QUALIFIED SURVEYOR TO LAY OUT ALL STREET WIDENING, CURB AND GUTTER, DRIVEWAY ENTRANCES, HANDICAP RAMPS, AND THE LIKE AS GENERALLY SHOWN ON THE DRAWINGS AND AS SPECIFICALLY DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. ALL STAKEOUT WORK SHALL BE DONE BY A SURVEYOR LICENSED TO DO BUSINESS IN THE STATE OF VIRGINIA. THE COST OF THE SURVEYOR SHALL BE DISTRIBUTED AMONG THE VARIOUS BID ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

1.05 PROJECT MEETINGS

- A. PRECONSTRUCTION CONFERENCES WITH THE CONTRACTOR WILL BE HELD WITHIN 20 DAYS AFTER THE EFFECTIVE DATE OF THE AGREEMENT.
- B. PROGRESS MEETINGS: EACH MONTH THE CONTRACTOR SHALL HOLD A PROGRESS MEETING TO REVIEW PROGRESS TO DATE AND TO RESOLVE ALL QUESTIONS FOR THE UPCOMING MONTH. NOTIFY THE OWNER AT LEAST 1 WEEK IN ADVANCE OF THE MEETING TO ENSURE SUITABLE DATE AND TIME. INCLUDE MEETING AGENDA WITH NOTIFICATION. CONTRACTOR SHALL PROVIDE UP TO DATE RECORD DRAWINGS AND EROSION CONTROL PLANS FOR REVIEW AND APPROVAL AT EACH PROGRESS MEETING.

1.06 SUBMITTALS

- A. PROGRESS SCHEDULES: SUBMIT A DETAILED CONSTRUCTION SCHEDULE WITHIN 7 DAYS OF AWARD OR INTENT TO AWARD. REVISE THE SCHEDULE BEFORE EACH PROGRESS MEETING.
- B. DISBURSEMENT OF FUNDS SCHEDULE: AT THE PRECONSTRUCTION CONFERENCE, SUBMIT A DISBURSEMENT OF FUNDS SCHEDULE DETAILING THE CONTRACTOR'S ANTICIPATED MONTHLY PAY REQUEST AMOUNTS FOR THE ENTIRE PROJECT TIME. REVISE THE SCHEDULE BEFORE EACH PROGRESS MEETING.
- C. AT THE PRECONSTRUCTION MEETING, SUBMIT THE FOLLOWING: A DETAILED WRITTEN CONSTRUCTION OPERATIONS PLAN PROVIDING A DESCRIPTION OF HOW BYPASS PUMPING OPERATIONS SHALL BE PERFORMED; A PLAN FOR BLASTING OPERATIONS; A PLAN FOR TEMPORARY STREAM CROSSINGS FOR ACCESS TO CONSTRUCTION AREAS; A COMPLETED REGISTRATION STATEMENT AND DETAILED STORMWATER POLLUTION PREVENTION PLAN; PREPARED IN ACCORDANCE WITH VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT FOR CONTROL OF STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
- D. SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES: WITHIN 10 DAYS OF NOTICE TO PROCEED A SUBMITTAL SCHEDULE FIXING THE DATES FOR SUBMISSION OF SHOP DRAWINGS, PROJECT DATA, SAMPLES, AND THE LIKE. UPDATE THIS SCHEDULE AT EACH PROGRESS MEETING TO REFLECT THE STATUS OF EACH SUBMITTAL ITEM.
 - (1) SUBMIT FOUR COPIES OF ALL SHOP DRAWINGS.
 - (2) A MAXIMUM OF TWO MARKED COPIES WILL BE RETURNED TO THE CONTRACTOR, OR ONE ADDITIONAL REPRODUCIBLE COPY MAY BE SUBMITTED TO BE MARKED AND RETURNED FOR CONTRACTOR'S USE.
 - (3) SUBMIT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND THE LIKE AS REQUIRED BY APPLICABLE SPECIFICATION SECTIONS.
 - (4) IDENTIFY EACH ITEM SUBMITTED USING APPLICABLE SPECIFICATION SECTION NUMBER AND PARAGRAPH REFERENCE, DRAWING, OR STANDARD DRAWING REFERENCE.
 - (5) ALL SHOP DRAWINGS SHALL BE APPROVED BY THE CONTRACTOR AND ANY SUBCONTRACTORS PRIOR TO SUBMITTAL. CERTIFYING THAT THE MATERIALS OR ITEM IS PROVIDED IN ACCORDANCE WITH CONTRACT DOCUMENTS.
 - (6) FAILURE TO COMPLY WITH THESE REQUIREMENTS WILL RESULT IN THE SUBMITTAL BEING RETURNED UNPROCESSED.
- E. SCHEDULE OF VALUES: SUBMIT DETAILED SCHEDULE OF VALUES AT LEAST 10 DAYS PRIOR TO FIRST APPLICATION FOR PAYMENT. THE OWNER OR HIS REPRESENTATIVE MUST APPROVE THE SCHEDULE OF VALUES. THE SCHEDULE OF VALUES SHALL IDENTIFY THE VARIOUS ITEMS THAT WILL NOT BE REIMBURSED THROUGH VRLF AS DEFINED BY THE OWNER.
- F. MATERIAL SCHEDULE: WITHIN 20 DAYS AFTER EFFECTIVE DATE OF THE AGREEMENT, SUBMIT FOR APPROVAL A SCHEDULE LISTING MANUFACTURER OF THE ITEMS OF EQUIPMENT AND MATERIALS PROPOSED FOR THE CONSTRUCTION. FOLLOWING APPROVAL OF THE SCHEDULE, NO CHANGES IN MATERIAL OR EQUIPMENT FROM THOSE LISTED WILL BE ALLOWED EXCEPT IN UNUSUAL OR

EXTENUATING CIRCUMSTANCES. WHEN SUCH CIRCUMSTANCES ARISE, THE CONTRACTOR SHALL REQUEST, IN WRITING, APPROVAL OF THE PROPOSED CHANGE STATING THE CIRCUMSTANCES NECESSITATING SUCH A CHANGE. THE INTENT OF THIS SCHEDULE IS TO NAME THE MANUFACTURERS OF MATERIAL SPECIFIED BY A PRODUCT STANDARD AND TO DESIGNATE WHICH MANUFACTURER WILL BE USED WHEN MORE THAN ONE HAS BEEN NAMED FOR AN ITEM IN THE SPECIFICATIONS. THE SCHEDULE SHALL NOT BE INTERPRETED AS ALLOWING ANY CHANGE FROM BASE BID ITEMS OR THOSE SUBSTITUTE ITEMS OFFERED WITH THE BID AND ACCEPTED IN THE AGREEMENT.

- G. CONSTRUCTION PHOTOGRAPHS: THE CONTRACTOR SHALL PROVIDE PHOTOGRAPHS OR VIDEO TAPE OF PROJECT AREAS TO BE DISTURBED PRIOR TO BEGINNING CONSTRUCTION AND SUBMITTED IMMEDIATELY TO WILEY & WILSON. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ANOTHER SET OF PHOTOGRAPHS OR VIDEO TAPE DOCUMENTING FINAL RESTORATION.
- H. CONTRACTOR SHALL UPDATE RECORD DRAWINGS AND PRESENT THEM AT EACH MONTHLY PROGRESS MEETING FOR REVIEW AND APPROVAL.

1.07 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. TEMPORARY UTILITIES

(1) TEMPORARY SANITARY FACILITIES: CONTRACTOR SHALL PROVIDE AND MAINTAIN IN A NEAT AND SANITARY CONDITION SUCH ACCOMMODATIONS FOR THE USE OF HIS EMPLOYEES AS WILL COMPLY WITH LAWS AND REGULATIONS.

B. POLLUTION CONTROL

- (1) DUST CONTROL: ENSURE THAT DUST IS HELD TO AN ABSOLUTE MINIMUM DURING ALL PORTIONS OF THE WORK THROUGH THE APPLICATION OF MOISTURE AND DUST SUPPRESSION AGENTS AS REQUIRED.
- (2) THE CONTRACTOR IS RESPONSIBLE FOR MANAGING CONSTRUCTION PRACTICES IN ACCORDANCE WITH THE APPROVED EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLANS, AND SHALL INSTALL AND MAINTAIN ALL MEASURES NECESSARY TO MAINTAIN COMPLIANCE WITH APPLICABLE STORMWATER MANAGEMENT AND EROSION CONTROL REGULATIONS.

C. PROJECT IDENTIFICATION

- (1) ONE CLEAR AND LEGIBLE PROJECT SIGN SHALL BE PROVIDED ON THE PROJECT BY THE CONTRACTOR AS SOON AS HE COMMENCES WORK AND MOBILIZES HIS FORCES. THE LOCATION OF SIGN SHALL BE AS DETERMINED BY THE OWNER. THE SIGN SHALL CONTAIN THE FOLLOWING INFORMATION AND MEET THE FOLLOWING REQUIREMENTS:
 - (a) DIMENSIONS SHALL NOT BE LESS THAN 4 FEET BY 8 FEET.
 - (b) LETTERING SHALL NOT BE LESS THAN AS SHOWN ON STANDARD DRAWING M-1B (CSO).
 - (c) IT SHALL LIST CONTRACTOR'S NAME, CONTRACTOR'S FOREMAN NAME, AND LOCAL PHONE NUMBER.
 - (d) IT SHALL LIST THE NAME OF THE PROJECT AND CITY PROJECT NUMBER.

- (e) THE CITY OF LYNCHBURG LOGO.
- (f) THE AMOUNT OF THE PROJECT.
- (g) IT SHALL LIST ENGINEER'S NAME, ENGINEER'S INSPECTOR, AND CSO CITIZEN INFORMATION LINE (804) 847-7246.
- (h) IT SHALL INDICATE FUNDING BY EPA AND COMMONWEALTH OF VIRGINIA GRANT.
- (i) THE SIGN SHALL BE CONSTRUCTED OF A STURDY AND DURABLE MATERIAL.
- (j) SIGN OR SIGNS SHALL BE PLACED IN SUCH A MANNER AS TO BE CLEARLY RECOGNIZABLE BY THE PUBLIC.

FURTHER DETAILS OF THE PROJECT SIGN'S REQUIREMENTS ARE SHOWN ON THE STANDARD DRAWING PROVIDED IN THIS PROJECT MANUAL (DRAWING M-1B (CSO)). PROJECT SIGN SHALL BE APPROVED BY THE OWNER.

THE CONTRACTOR SHALL MAINTAIN THIS SIGN FOR THE DURATION OF THE CONTRACT AND DISPOSE OF IT AFTER COMPLETION. IF THIS SIGN BECOMES DETERIORATED AND THE ENGINEER DECIDES A NEW SIGN IS NEEDED, THE CONTRACTOR SHALL FURNISH IT ALSO. THERE SHALL BE NO SEPARATE PAYMENT FOR THIS ITEM.

D. TRAFFIC CONTROL

- (1) THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN AMBER WARNING LIGHTS AT ALL LOCATIONS NECESSARY FOR THE CONTROL AND PROTECTION OF VEHICULAR AND PEDESTRIAN TRAFFIC. WARNING LIGHTS PLACED AT OR ON WARNING SIGNS SHALL BE FLASHING LIGHTS. WARNING LIGHTS USED AT LOCATIONS OF WORK AREA SHALL BE STEADY-BURN LIGHTS. AMBER WARNING LIGHTS SHALL BE BATTERY POWER LIGHTS CONFORMING TO THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) STANDARD FOR FLASHING AND STEADY-BURN BARRICADE WARNING LIGHTS.
- (2) THE CONTRACTOR SHALL MAINTAIN LOCAL RESIDENT AND BUSINESS ACCESS ON ALL STREETS DURING CONSTRUCTION OF ALL IMPROVEMENTS ON THIS PROJECT.

1.08 MATERIALS AND EQUIPMENT

- A. QUALITY: MATERIAL AND EQUIPMENT INCORPORATED INTO THE WORK
 - (1) CONFORM TO APPLICABLE SPECIFICATIONS AND STANDARDS.
 - (2) COMPLY WITH SIZE, MAKE, TYPE, AND QUALITY SPECIFIED, OR AS SPECIFICALLY APPROVED IN WRITING BY THE OWNER.
 - (3) MANUFACTURED AND FABRICATED PRODUCTS

DESIGN, FABRICATE, AND ASSEMBLE IN ACCORDANCE WITH THE BEST ENGINEERING AND SHOP PRACTICES.

MANUFACTURE LIKE PARTS OF DUPLICATE UNITS TO STANDARD SIZES AND GAGES, TO BE INTERCHANGEABLE.

TWO OR MORE ITEMS OF THE SAME KIND SHALL BE IDENTICAL, BY THE SAME MANUFACTURER.

PRODUCTS SHALL BE SUITABLE FOR SERVICE CONDITIONS.

EQUIPMENT CAPACITIES, SIZES, AND DIMENSIONS SHOWN OR SPECIFIED SHALL BE ADHERED TO UNLESS VARIATIONS ARE SPECIFICALLY APPROVED IN WRITING.

- (4) DO NOT USE MATERIAL OR EQUIPMENT FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS DESIGNED OR IS SPECIFIED.
- (5) EXCEPT AS SPECIFICALLY INDICATED OR SPECIFIED, MATERIALS AND EQUIPMENT REMOVED FROM EXISTING STRUCTURES SHALL NOT BE USED IN THE COMPLETED WORK.
- (6) FOR MATERIAL AND EQUIPMENT SPECIFICALLY INDICATED OR SPECIFIED TO BE REUSED IN THE WORK:

USE SPECIAL CARE IN REMOVAL, HANDLING, STORAGE, AND REINSTALLATION TO ASSURE PROPER FUNCTION IN THE COMPLETED WORK.

ARRANGE FOR TRANSPORTATION, STORAGE, AND HANDLING OF PRODUCTS WHICH REQUIRE OFF-SITE STORAGE, RESTORATION, OR RENOVATION. PAY ALL COSTS FOR SUCH WORK.

(7) MANUFACTURER'S INSTRUCTIONS

WHEN CONTRACT DOCUMENTS REQUIRE THAT INSTALLATION OF WORK SHALL COMPLY WITH MANUFACTURER'S PRINTED INSTRUCTIONS, OBTAIN AND DISTRIBUTE COPIES OF SUCH INSTRUCTIONS TO PARTIES INVOLVED IN THE INSTALLATION.

MAINTAIN ONE SET OF COMPLETE INSTRUCTIONS AT THE JOB SITE DURING INSTALLATION AND UNTIL COMPLETION.

HANDLE, INSTALL, CONNECT, CLEAN, CONDITION, AND ADJUST PRODUCTS IN ACCORDANCE WITH SUCH INSTRUCTIONS AND IN CONFORMITY WITH SPECIFIED REQUIREMENTS.

DO NOT PROCEED WITH WORK WITHOUT CLEAR INSTRUCTIONS.

PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DO NOT OMIT ANY PREPARATORY STEP OR INSTALLATION PROCEDURE UNLESS SPECIFICALLY MODIFIED OR EXEMPTED BY CONTRACT DOCUMENTS.

B. TRANSPORTATION AND HANDLING

(1) ARRANGE DELIVERIES OF PRODUCTS IN ACCORDANCE WITH CONSTRUCTION SCHEDULES. COORDINATE TO AVOID CONFLICT WITH WORK AND CONDITIONS AT THE SITE.

DELIVER PRODUCTS IN UNDAMAGED CONDITION, IN MANUFACTURER'S ORIGINAL CONTAINERS OR PACKAGING, WITH IDENTIFYING LABELS INTACT AND LEGIBLE.

IMMEDIATELY ON DELIVERY, INSPECT SHIPMENTS TO ASSURE COMPLIANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND APPROVED SUBMITTALS, AND THAT PRODUCTS ARE PROPERLY PROTECTED AND UNDAMAGED.

(2) PROVIDE EQUIPMENT AND PERSONNEL TO HANDLE PRODUCTS BY METHODS TO PREVENT SOILING OR DAMAGE TO PRODUCTS OR PACKAGING.

C. STORAGE AND PROTECTION

(1) STORE PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, WITH SEALS AND LABELS INTACT AND LEGIBLE.

STORE PRODUCTS SUBJECT TO DAMAGE BY THE ELEMENTS IN WEATHERTIGHT ENCLOSURES.

MAINTAIN TEMPERATURE AND HUMIDITY WITHIN THE RANGES REQUIRED BY MANUFACTURER'S INSTRUCTIONS.

(2) EXTERIOR STORAGE

STORE FABRICATED PRODUCTS ABOVE THE GROUND, ON BLOCKING OR SKIDS; PREVENT SOILING OR STAINING; COVER PRODUCTS WHICH ARE SUBJECT TO DETERIORATION WITH IMPERVIOUS SHEET COVERINGS; AND PROVIDE ADEQUATE VENTILATION TO AVOID CONDENSATION.

STORE LOOSE GRANULAR MATERIALS IN A WELL-DRAINED AREA ON SOLID SURFACES TO PREVENT MIXING WITH FOREIGN MATTER.

- (3) ARRANGE STORAGE IN A MANNER TO PROVIDE EASY ACCESS FOR INSPECTION. MAKE PERIODIC INSPECTIONS OF STORED PRODUCTS TO ASSURE THAT PRODUCTS ARE MAINTAINED UNDER SPECIFIED CONDITIONS AND FREE FROM DAMAGE OR DETERIORATION.
- (4) PROTECTION AFTER INSTALLATION: PROVIDE SUBSTANTIAL COVERINGS AS NECESSARY TO PROTECT INSTALLED PRODUCTS FROM DAMAGE FROM TRAFFIC AND SUBSEQUENT CONSTRUCTION OPERATIONS. REMOVE WHEN NO LONGER NEEDED.

D. PROJECT SUBSTITUTIONS

(1) SUBSTITUTIONS: THE CONTRACTOR MAY OFFER WITH HIS BID, SUBSTITUTE ITEMS OF EQUIPMENT AND MATERIALS TO THOSE OF SPECIFIED MANUFACTURERS CALLED FOR IN THE SPECIFICATION SECTIONS, PROVIDED THAT, IF APPROVED:

NO MAJOR CHANGES IN THE CONSTRUCTION OR DESIGN INTENT OF THE PROJECT WOULD BE REQUIRED. CHANGES REQUIRED TO ACCOMMODATE SUBSTITUTED ITEMS SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST OR TIME DELAY.

FEATURES OF QUALITY, CAPACITY, CONSTRUCTION, PERFORMANCE, APPEARANCE, SIZE, ARRANGEMENT, AND GENERAL UTILITY INCLUDING ECONOMY OF OPERATION OF SUBSTITUTES OFFERED, EITHER PARALLEL OR EXCEED THOSE OF SPECIFIED PRODUCTS.

THE PROVISIONS OF ARTICLE 6.30 OF THE GENERAL CONDITIONS AND ANY OTHER GUARANTEES, IF REQUIRED BY THE SPECIFICATION

SECTIONS, SHALL APPLY IN FULL FORCE AND EFFECT TO THE PERFORMANCE OF SUCH SUBSTITUTE PRODUCTS APPROVED FOR INCORPORATION INTO THE WORK.

- (2) TECHNICAL DATA COVERING THE PROPOSED SUBSTITUTION SHALL BE FURNISHED WITH THE BID WHEN POSSIBLE, AND NOT LATER THAN 10 DAYS AFTER BID SUBMISSION.
- THE CONTRACTOR SHALL GIVE HIS PERSONAL SUPERINTENDENCE TO THE WORK AND SHALL ASSIGN A SPECIFIC PROJECT SUPERINTENDENT, EXPERIENCED WITH URBAN UTILITY WORK, TO THE PROJECT. THIS SUPERINTENDENT SHALL BE PRESENT ON THE WORK SITE AT ALL TIMES DURING PROGRESS, ANY ABSENCES SHALL BE COORDINATED WITH THE ENGINEER, AND SATISFACTORY COVERAGE PROVIDED TO ENSURE ADEQUATE SUPERINTENDENCE OF WORK. THE PROJECT SUPERINTENDENT SHALL BE FULLY COMPETENT AND HAVE FULL AUTHORITY TO ACT FOR THE CONTRACTOR, AND SHALL PROVIDE EVIDENCE OF COMPETENCY SATISFACTORY TO THE ENGINEER.
- 1.10 THE CONTRACTOR SHALL HAVE POSTED IN A CONSPICUOUS SPOT WITH HIS EQUIPMENT AND ON THE WORK SITE, A SIGN OR STICKER IDENTIFYING HIS EQUIPMENT AS TO ITS OWNER AND AN EMERGENCY 24-HOUR PHONE NUMBER.
- 1.11 THE CONTRACTOR SHALL DESIGNATE A RESPONSIBLE MEMBER OF HIS ORGANIZATION AT THE SITE WHOSE DUTY SHALL BE THE PREVENTION OF ACCIDENTS.
- 1.12 CONTRACT CLOSEOUT SHALL INCLUDE THE FOLLOWING:
 - A. PUNCH LIST: CORRECT ALL PUNCH LIST ITEMS.
 - B. CLEANING: CLEAN UP ALL DEBRIS; REMOVE STAINS, SPOTS, MARKS, AND DIRT; REMOVE PAINT SPOTS AND SMEARS FROM ALL SURFACES; CONDUCT FINAL SOIL STABILIZATION, TREE AND DEBRIS REMOVAL AND REPAIR, AND CLEAN APPURTENANCES.
 - C. PROJECT RECORD DOCUMENTS
 - PROVIDE ONE COMPLETE SET OF DRAWINGS AND THE PROJECT MANUAL RECORDING ALL CHANGES TO THE WORK TO INDICATE ACTUAL INSTALLATION. THE CONTRACTOR IS TO NOTE CHANGES IN LEGIBLE RED LETTERS AT LEAST 1/8 INCH HIGH. THE CONTRACTOR WILL BE RESPONSIBLE FOR ACCURATELY RECORDING THE LENGTHS OF INSTALLED PIPE AND VERTICAL HEIGHTS OF CLEANOUTS AND MANHOLES AS THEY ARE INSTALLED. THE CONTRACTOR SHALL NOTE THE STRUCTURE/LOT ADDRESS AND THE DISTANCE TO THE NEAREST MANHOLE ON THE DRAWINGS FOR ALL SANITARY SERVICES INSTALLED. FOR ALL NEW WATER SERVICES, THE STRUCTURE/LOT ADDRESS AND THE DISTANCE ALONG THE MAIN LINE TO THE NEAREST MAIN LINE VALVE SHALL BE NOTED ON THE DRAWINGS. THIS INFORMATION WILL BE REVIEWED AT MONTHLY PROGRESS MEETINGS AND WILL BE USED AS A BASIS FOR PAY REQUESTS. THE END OF PROJECT AS-BUILT SURVEY BY A LICENSED SURVEYOR SHALL RECORD THE NORTHING, EASTING, AND RIM ELEVATION COORDINATES OF ALL MANHOLES AND CLEANOUTS, DEFLECTIONS TO UPSTREAM MANHOLES, AND THE INVERT ELEVATIONS OF ALL PIPES IN NEWLY INSTALLED MANHOLES. THE SURVEYOR SHALL USE THIS ELECTRONIC INFORMATION TO CALCULATE MANHOLE TO MANHOLE LENGTHS AND SLOPES FOR ALL NEWLY INSTALLED PIPES. THE CONTRACTOR'S RECORD DRAWING SUBMITTAL SHALL INCLUDE A DIGITAL AND HARDCOPY PRINTOUT OF THIS AS-BUILT SURVEY AND CALCULATED INFORMATION IN TABULAR FORMAT - INCLUDING THE SURVEYORS FEATURE CODE LEGEND, A DIGITAL COPY OF THE SURVEYOR'S

ORIGINAL AS-BUILT SURVEY INFORMATION IN ASCII FORMAT, AND A FINAL COPY OF THE CONTRACTOR'S REDLINED CONSTRUCTION DRAWINGS NOTING ALL AS INSTALLED CONDITIONS. THESE THREE ITEMS WILL THEN BE CONSOLIDATED BY THE ENGINEER TO PROVIDE ONE SET OF DIGITAL RECORD DRAWINGS FOR THE CITY.

- (2) THESE RECORDS ARE A SPECIFIC CONTRACT REQUIREMENT, AND FINAL PAYMENT WILL NOT BE MADE UNTIL THESE DRAWINGS AND PROJECT MANUAL HAVE BEEN SUBMITTED IN AN ACCEPTABLE FORM.
- D. GUARANTEES, WARRANTIES, AND BONDS: SUBMIT ALL REQUIRED GUARANTEES, WARRANTIES, AND BONDS.

- E. LIST OF MANUFACTURERS AND SUPPLIERS: AT THE CONCLUSION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT A COMPLETE LIST OF SUBCONTRACTORS, MANUFACTURERS, AND SUPPLIERS WHO PARTICIPATED IN THE CONSTRUCTION OR WHO FURNISHED MATERIALS OR EQUIPMENT. THE ADDRESS OF EACH FIRM SHALL BE INCLUDED, TOGETHER WITH TYPES OF MATERIALS OR WORK PERFORMED.
- F. AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS.
- G. CONSENT OF SURETY TO FINAL PAYMENT AIA FORM G707 IF RETAINAGE IS IN ESCROW ACCOUNT.
- H. TELEVISING OF LINES: THE CITY RESERVES THE RIGHT TO TELEVISE ANY SEWER OR STORM LINE AS A PREREQUISITE TO FINAL ACCEPTANCE.

END OF SECTION

SECTION 02100 - SITE PREPARATION

- 1. GENERAL
- 1.01 PROVIDE BARRICADES, COVERINGS, OR OTHER TYPES OF PROTECTION NECESSARY TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS NOT INDICATED TO BE REMOVED, AND IMPROVEMENTS ON ADJOINING PROPERTIES.
 - A. RESTORE ALL IMPROVEMENTS DAMAGED BY THIS WORK TO THEIR ORIGINAL CONDITION, AND ACCEPTABLE TO THE OWNER OR OTHER PARTIES OR AUTHORITIES HAVING JURISDICTION, UNLESS INDICATED OTHERWISE. DAMAGES CAUSED BY CONTRACTOR ACCIDENT, NEGLIGENCE, ERROR, CARELESSNESS, OR WHICH COULD HAVE BEEN REASONABLY AVOIDED WITHOUT UNDUE IMPACT TO CONSTRUCTION METHODS SHALL BE REPAIRED AT CONTRACTOR EXPENSE.
- 1.02 PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST CUTTING, BREAKING, OR SKINNING OF ROOTS; SKINNING AND BRUISING OF BARK; SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE; EXCESS FOOT OR VEHICULAR TRAFFIC; OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY FENCES, BARRICADES, OR GUARDS AS REQUIRED TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING. TREES AND VEGETATION WHICH ARE WOUNDED OR STRESSED DUE TO FAILURE TO ADHERE TO THE ABOVE STANDARDS OF CARE SHALL BE RESTORED, REMOVED, AND/OR REPLACED AT CONTRACTOR EXPENSE AT THE DIRECTION OF THE ENGINEER. RESTORATION FOR UNAVOIDABLE IMPACTS WILL BE PAID FOR IN ACCORDANCE WITH BID SCHEDULE ITEMS.
- 1.03 BURNING WILL NOT BE PERMITTED.
- 1.04 STORE AND USE EXPLOSIVES IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL SATISFACTORILY CORRECT ALL DAMAGE RESULTING FROM USE OF EXPLOSIVES.
- 2. PRODUCTS: NOT USED
- 3. EXECUTION
- 3.01 LAND DISTURBING AND CONSTRUCTION LIMITS CRITERIA FOR SEWER, WATER, AND STORM LINE CONSTRUCTION
 - A. GENERAL REQUIREMENTS APPLYING TO ALL AREAS:
 - (1) CONTRACTOR SHALL PLAN CONSTRUCTION TO MINIMIZE DISTURBANCE TO PROPERTIES ADJACENT TO THE SEWER, WATER, AND STORM LINES. CONTRACTOR SHALL FLAG THE PROPOSED LIMITS OF CONSTRUCTION AND MARK ALL TREES PROPOSED TO BE CUT FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO ANY CLEARING BEING PERFORMED. THE CONTRACTOR SHALL USE APPROPRIATELY SIZED EQUIPMENT FOR UTILITY INSTALLATION, TO LIMIT IMPACTS TO MINIMUM NECESSARY FOR UTILITY INSTALLATION.
 - (2) THE ENGINEER RESERVES THE RIGHT TO LIMIT THE WIDTH OF LAND TO BE DISTURBED AND TO DESIGNATE ON THE DRAWINGS OR IN THE FIELD CERTAIN AREAS OR ITEMS WITHIN THIS WIDTH TO BE PROTECTED FROM DAMAGE.

- (3) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO AREA OR ITEMS DESIGNATED BY THE ENGINEER TO BE PROTECTED OR OUTSIDE CONSTRUCTION EASEMENT. REPAIRS TO, REPLACEMENT OF, OR REPARATIONS FOR AREAS OR ITEMS DAMAGED SHALL BE MADE TO THE SATISFACTION OF THE ENGINEER AT CONTRACTOR EXPENSE BEFORE ACCEPTANCE OF THE COMPLETED PROJECT.
- (4) UNLESS OTHERWISE NOTED ON THE DRAWINGS, ALL TREES WITH DIAMETERS OF 6 INCHES OR LARGER, MEASURED AT THE BASE, CUT ON ANY PROJECT, SHALL BE CUT INTO FIREPLACE LENGTHS, 24 INCHES, AND STACKED WITHIN THE "CONSTRUCTION LIMITS" AT A LOCATION SUITABLE TO THE PROPERTY OWNER. BRUSH, LAPS, ROOTS, AND STUMPS FROM TREES SHALL BE REMOVED FROM THE SITE. IN UNDEVELOPED AREAS, THE CONTRACTOR WILL BE ALLOWED TO LEAVE STUMPS UNDISTURBED PROVIDED THE TREE IS CUT WITHIN 6 INCHES OF THE FINISH GRADE, STUMPS SHALL BE REMOVED WHEN THEY ARE LOCATED WITHIN FILL SECTION LIMITS FOR STORMWATER MANAGEMENT FACILITIES, OR DRAINAGE SWALES.
- (5) ALL BUILDINGS OR STRUCTURES LOCATED ALONG THE LINE SHALL BE PROTECTED BY THE CONTRACTOR. HAND TRENCHING, SHORING, OR OTHER METHODS MAY BE REQUIRED.
- (6) ANY FENCES DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED WITH NEW MATERIALS TO A CONDITION EQUAL TO OR BETTER THAN THEIR ORIGINAL CONDITION OR TO THE SATISFACTION OF THE ENGINEER.
- (7) CONTRACTOR SHALL LIMIT WIDTH OF DISTURBED AREA THROUGH GARDEN AND LAWN AREAS TO A WIDTH ABSOLUTELY NECESSARY FOR CONSTRUCTION. PRIOR TO CONSTRUCTION, TOPSOIL AND TURF SHALL BE STRIPPED FROM AREAS OF GARDEN OR LAWN TO BE DISTURBED BY CONTRACTOR FOR A DEPTH OF 12 INCHES AND STOCKPILED NEAR GARDEN. AFTER BACKFILLING PIPE, TOPSOIL SHALL BE LOOSELY SPREAD OVER ALL DISTURBED AREAS TO A DEPTH OF AT LEAST 12 INCHES, AND TURF REINSTATED.
- (8) CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM PROPERTY OWNERS FOR USE OF ANY ACCESS ROADS OTHER THAN ONES LOCATED WITHIN RIGHTS-OF-WAY. WRITTEN PERMISSION SHALL CONTAIN CONDITIONS FOR USE AND RESTORATION AGREEMENTS BETWEEN PROPERTY OWNER AND CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND COMPLYING WITH ALL RELEVANT LOCAL, STATE, AND FEDERAL PERMITS ASSOCIATED WITH WORK ON PRIVATE PROPERTY.
- (9) ALL AREAS DISTURBED SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THEIR ORIGINAL CONDITION AND SHALL BE GRADED TO DRAIN.
- (10) THE CONTRACTOR SHALL REPLACE OR REPAIR ALL DAMAGED OR DESTROYED HEDGE ROWS OR PROPERTY CORNERS. PROPERTY CORNERS REMOVED DURING CONSTRUCTION SHALL BE REPLACED BY A SURVEYOR LICENSED TO PRACTICE BOUNDARY SURVEYS IN VIRGINIA.
- (11) BEFORE CROSSING OR ENTERING INTO ANY JURISDICTIONAL WETLANDS, CONTRACTOR SHALL VERIFY WHETHER OR NOT A WETLANDS PERMIT HAS BEEN OBTAINED FOR THE ENCROACHMENT AND WHETHER SPECIAL RESTRICTIONS HAVE BEEN IMPOSED. CARE SHALL BE TAKEN TO PREVENT DRAINING OR OTHERWISE DESTROYING ALL WETLAND AREAS. RESTORE AS STATED ON EITHER THE PROJECT DRAWINGS, THE CONTRACT DOCUMENTS, AND/OR AS NOTED IN THE PERMIT.

(12) CONTRACTOR SHALL PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED BY THE CITY ENGINEER TO REMAIN IN PLACE AGAINST CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING AND BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC, OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY FENCES OR BARRICADES AS REQUIRED TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING AT NO ADDITIONAL COST.

arangan kanang mengangan mengang Talangga Berberangan Malahangkan Kebadah Malahan Mengang Mengang Berberang Sa

TREES AND SHRUBS THAT ARE TO REMAIN WITHIN THE CONSTRUCTION LIMITS WILL BE INDICATED ON THE DRAWINGS OR CONSPICUOUSLY MARKED ON SITE. UNLESS OTHERWISE NOTED, TREES WITHIN THE CONSTRUCTION LIMITS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

CLEARING SHALL CONSIST IN THE FELLING, CUTTING UP, AND SATISFACTORY DISPOSAL OF TREES AND OTHER VEGETATION DESIGNATED FOR REMOVAL IN ACCORDANCE WITH THESE SPECIFICATIONS.

GRUBBING SHALL CONSIST OF THE REMOVAL OF ROOTS 1 1/2-INCH AND LARGER, ORGANIC MATTER AND DEBRIS, AND STUMPS HAVING A DIAMETER OF THREE INCHES OR LARGER, TO A DEPTH OF AT LEAST 18 INCHES BELOW THE SURFACE AND OR SUBGRADE; WHICH EVER IS LOWER, AND THE DISPOSAL THEREOF.

CAREFULLY AND CLEANLY CUT ROOTS AND BRANCHES OF TREES INDICATED TO REMAIN WHERE THE ROOTS AND BRANCHES OBSTRUCT CONSTRUCTION OF THE UTILITY LINE. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR ROOTS AND BRANCHES OVER 1 ½ INCHES DIAMETER THAT ARE CUT DURING CONSTRUCTION OPERATIONS. TEMPORARILY COVER ALL EXPOSED ROOTS WITH WET BURLAP TO PREVENT ROOTS FROM DRYING OUT. PROVIDE EARTH COVER AS SOON AS POSSIBLE.

DAMAGED TREES AND VEGETATION DESIGNATED TO REMAIN SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE IN A MANNER ACCEPTABLE TO THE CITY ENGINEER IF THEY ARE DAMAGED BY CONSTRUCTION OPERATIONS. REPAIR TREE DAMAGE AS DIRECTED BY A QUALIFIED TREE SURGEON.

(13) PRIOR TO BEGINNING GRADING OR EMBANKMENT OPERATIONS IN ANY AREA, ALL NECESSARY CLEARING AND GRUBBING IN THAT AREA SHALL HAVE BEEN COMPLETED. SHOULD THE CONTRACTOR, THROUGH NEGLIGENCE OR FAULT, EXCAVATE BELOW THE DESIGNATED GRADES, HE SHALL REPLACE THE EXCAVATION WITH APPROVED SATISFACTORY MATERIALS, IN AN APPROVED METHOD, AT HIS OWN EXPENSE. ALL MATERIAL DETERMINED UNSATISFACTORY SHALL BE DISPOSED OF IN WASTE AREAS AS DIRECTED. TOPSOIL SHALL NOT BE USED IN EMBANKMENTS BUT SHALL BE HANDLED AND PLACED AS DIRECTED. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO THE CHARACTER, QUANTITY, AND DISTRIBUTION OF ALL MATERIALS TO BE EXCAVATED. NO PAYMENT WILL BE MADE FOR ANY EXCAVATED MATERIAL THAT IS USED FOR PURPOSES OTHER THAN THOSE DESIGNATED.

- B. SPECIFIC REQUIREMENTS APPLYING TO DEVELOPED SUBDIVISIONS AND LOTS
 - (1) ALL TREES LOCATED BEYOND 7.5 FEET OF THE CENTERLINE SHALL BE PROTECTED BY THE CONTRACTOR UNLESS THE CONTRACTOR OBTAINS WRITTEN AUTHORIZATION FROM THE ENGINEER TO REMOVE THEM. THE ENGINEER RESERVES THE RIGHT TO DESIGNATE OTHER TREES LOCATED CLOSER TO THE CENTERLINE FOR PROTECTION WHERE POSSIBLE.
 - (2) ALL SHRUBS, HEDGES, OR OTHER ORNAMENTAL PLANTINGS LOCATED ALONG THE LINE SHALL BE PROTECTED OR MOVED AND REPLANTED BY THE CONTRACTOR.
 - (3) SEPTIC SYSTEMS, WELLS, OR SPRINGS LOCATED WITHIN 50 FEET OF THE CENTERLINE SHALL BE PROTECTED BY THE CONTRACTOR.
 - (4) CONTRACTOR SHALL GRUB ONLY BRUSH, ROOTS, AND STUMPS OF REMOVED TREES. DAMAGE TO LAWNS SHALL BE KEPT TO AN ABSOLUTE MINIMUM NECESSARY FOR CONSTRUCTION.
 - (5) EXCAVATED OR BLASTED ROCK SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE ORDERED BY THE ENGINEER.
 - (6) RESTORATION AND FINE GRADING SHALL FOLLOW WITHIN 1 WEEK FROM THE TIME AN AREA IS DISTURBED OR WITHIN 500 FEET FROM THE IMMEDIATE WORK SITE, WHICHEVER OCCURS FIRST. SEEDING SHALL FOLLOW AS ORDERED BY THE ENGINEER.
- C. SPECIFIC REQUIREMENTS APPLYING TO UNDEVELOPED AREAS
 - (1) ALL TREES 12 INCHES IN DIAMETER OR LARGER LOCATED BEYOND 7.5 FEET OF THE CENTERLINE SHALL BE PROTECTED UNLESS CONTRACTOR OBTAINS WRITTEN AUTHORIZATION FROM ENGINEER TO REMOVE THEM. ENGINEER RESERVES THE RIGHT TO DESIGNATE SELECT TREES LOCATED CLOSER TO CENTERLINE FOR PROTECTION WHERE POSSIBLE.
 - (2) IN AREAS WHERE ANIMALS ARE KEPT, CONTRACTOR SHALL NOTIFY PROPERTY OWNER PRIOR TO COMMENCING WORK AND KEEP OWNER ADVISED OF PROGRESS OF WORK. FENCES SHALL BE KEPT SECURE AT ALL TIMES AND ANIMALS PROTECTED FROM OPEN DITCHES, MACHINERY, BLASTING, AND OTHER HAZARDS.
 - (3) ALL AREAS SHALL BE GRUBBED AND CLEARED OF STUMPS AND ROOTS.
 - (4) RESTORATION AND FINE GRADING SHALL FOLLOW WITHIN 1 WEEK FROM THE TIME AN AREA IS DISTURBED OR WITHIN 1,000 FEET FROM THE IMMEDIATE WORK SITE, WHICHEVER OCCURS FIRST. SEEDING SHALL FOLLOW AS ORDERED BY THE ENGINEER.
 - (5) WHEN WORKING IN WOODED AREAS, THE CONTRACTOR MAY CONSTRUCT SMALL BRUSH PILES FOR BIRDS AND WILDLIFE INSTEAD OF HAULING OFF OR MULCHING THE BRUSH. THE BRUSH PILES SHALL NOT CONTAIN STUMPS, LARGE LIMBS, ROCKS, BRICK, BLOCK, DIRT, BROKEN PAVEMENT, BROKEN CONCRETE, PAPER, YARD WASTE, OR SCRAP METAL. THE BRUSH PILE SHALL BE CONSTRUCTED ONLY ON CITY OWNED EASEMENTS, RIGHT-OF-WAYS, OR WITH SPECIFIC WRITTEN LAND OWNER PERMISSION.

D. CONSTRUCTION LIMITS

- (1) CONTRACTOR SHALL NOT DISTURB ANY AREAS OUTSIDE THE FOLLOWING LIMITS SPECIFIED IN THIS SECTION WITHOUT EXPRESS WRITTEN PERMISSION FROM THE ENGINEER.
- (2) NO "CLEAR CUTTING" OF TIMBER SHALL BE PERMITTED WITHIN THE CONSTRUCTION LIMITS. CONTRACTOR SHALL MAKE SELECT CUTTING OF TREES, TAKING SMALLEST TREES FIRST, THAT ARE MANDATORY FOR THE CONSTRUCTION OF THE SEWER LINE. ENGINEER'S DECISION SHALL BE FINAL ON DETERMINATION OF WHICH TREES ARE TO BE CUT.
- (3) THE FOLLOWING WIDTHS MEASURED FROM THE CENTERLINE OF THE SEWER, WATER, AND STORM LINES SHALL BE CONSIDERED THE MAXIMUM ALLOWABLE WORKING AREA AND BE REFERRED TO AS "CONSTRUCTION LIMIT."

PIPE SIZE	DISTANCE FROM C/L	TOTAL ALLOWABLE WIDTH
12-INCH OR SMALLER 15-INCH TO 18-INCH	15 FEET 20 FEET	30 FEET 40 FEET
24-INCH AND UP	25 FEET	50 FEET

ALL AREAS OUTSIDE THESE CONSTRUCTION LIMITS SHALL BE PROTECTED BY THE CONTRACTOR UNLESS WRITTEN VARIATIONS ARE GRANTED BY THE ENGINEER. ANY GRADING OR EXCAVATION REQUIRED OUTSIDE THESE LIMITS FOR EQUIPMENT TRAVEL DURING THE COURSE OF CONSTRUCTION AS WELL AS EROSION CONTROL, ACCESS OR HAUL ROAD INSTALLATION AND REMOVAL, RESTORATION, SEEDING AND GROUND COVER SHALL BE PROVIDED AT CONTRACTOR EXPENSE. THIS INCLUDES REDISTURBANCE OF STABILIZED AREAS DUE TO CONSTRUCTION SEQUENCING OR OTHER ACCESS REQUIREMENTS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

3.02 DEMOLITION

- A. WHEN AN EXISTING MANHOLE OR DROP INLET IS DESIGNATED TO BE ABANDONED AND THE STORM LINES, EITHER ENTERING OR EXITING THE MANHOLE HAVE BEEN FILLED WITH FLOWABLE FILL, THE UPPER PORTION OF THE MANHOLE SHALL BE REMOVED TO A MINIMUM OF TWO FEET BELOW THE PROPOSED FINISHED GRADE, A HOLE PUNCHED IN THE BOTTOM OF THE STRUCTURE, AND THE STRUCTURE BACKFILLED WITH VDOT #57 STONE COMPACTED IN 6-INCH LIFTS. THE REMAINING PORTION SHALL BE BACKFILLED WITH STONE OR ASPHALT TO MATCH ROADWAY CROSS-SECTION. IN OFF ROAD AREAS, AASHTO TYPE III GEOTEXTILE WILL BE LAID ON THE STONE BASE AND SUITABLE SOIL MATERIAL COMPACTED ON TOP TO MATCH SURROUNDING GRADE. THE FRAME AND COVERS FROM ALL EXISTING MANHOLES TO BE ABANDONED OR REMOVED SHALL BE SALVAGED AND TRANSPORTED TO THE CITY'S STORAGE YARD AT 6TH AND FLOYD STREETS.
- B. ALL ABANDONED VALVE BOXES SHALL BE REMOVED TO 6 INCHES BELOW THE SURFACE AND BACKFILLED WITH LIKE SURFACE MATERIAL. WHEN ABANDONING EXISTING LINES, THE LINE SHALL BE ABANDONED AT ITS SOURCE AND ALL WATER CONTROL DEVICES CLOSED AND A 1-FOOT SEGMENT OF THE LINE SHALL BE REMOVED AT THE WATER CONTROL DEVICE.
- C. REMOVE PIPE AT LOCATIONS SHOWN ON THE DRAWINGS OR WHERE NECESSARY FOR CONSTRUCTION OF THE NEW LINE. PLUG PIPES AT EACH END AND AT MANHOLES. WHEN AN EXISTING LINE IS DESIGNATED TO BE ABANDONED IN PLACE, THE LOW END OF THE LINE IS TO BE PLUGGED AND LEAN CONCRETE GROUT (FLOWABLE FILL) SHALL BE PUMPED INTO THE LINE UNTIL LINE IS

COMPLETELY FILLED. SALVAGED PIPE SHALL BE TRANSPORTED TO THE CITY'S PIPE STORAGE YARD AT 6TH AND FLOYD STREETS AS DIRECTED BY THE ENGINEER. ALL UNSALVAGEABLE PIPE SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE PROMPTLY REMOVED FROM THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OFF LOADING SALVAGED PIPE AND SCHEDULING DELIVERY 24 HOURS IN ADVANCE.

- 3.03 CLEAN UP DEBRIS RESULTING FROM SITE CLEARING OPERATIONS CONTINUOUSLY WITH THE PROGRESS OF THE WORK.
- 3.04 REMOVE PROMPTLY ALL SALVAGEABLE MATERIAL THAT BECOMES PROPERTY OF THE CONTRACTOR AND IS NOT TO BE REUSED IN CONSTRUCTION. SALE OF MATERIAL ON THE SITE IS PROHIBITED. DEBRIS FROM THE SITE SHALL BE REMOVED IN SUCH A MANNER AS TO PREVENT SPILLAGE. KEEP PAVEMENT AND AREA ADJACENT TO SITE CLEAN AND FREE FROM MUD, DIRT, DUST, AND DEBRIS AT ALL TIMES.
- 3.05 ALL WASTE MATERIAL AND DEBRIS FROM THE PROJECT SHALL BE TAKEN TO THE CITY LANDFILL OR OTHER LANDFILL APPROVED BY THE CITY. THE MATERIAL SHALL BE BROKEN OR CUT INTO PIECES WHICH CAN BE EASILY COMPACTED BY THE LANDFILL EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TIPPING FEES ASSESSED AT ANY LANDFILL.
- 3.06 REMOVE DEBRIS FROM SITE IN SUCH A MANNER AS TO PREVENT SPILLAGE. KEEP PAVEMENT AND AREA ADJACENT TO SITE CLEAN AND FREE FROM MUD, DIRT, AND DEBRIS AT ALL TIMES.

END OF SECTION

SECTION 02220 - TRENCHING AND BACKFILLING

- 1. GENERAL
- 1.01 REFERENCE SPECIFICATIONS WHERE APPLICABLE TO WORK UNDER THIS SECTION ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:
 - A. AMERICAN SOCIETY FOR TESTING AND MATERIALS......ASTM
- 1.02 STORAGE AND USE OF EXPLOSIVES SHALL BE IN ACCORDANCE WITH THIS PROJECT MANUAL AND THE NATIONAL FIRE PROTECTION ASSOCIATION'S NFPA 495, EXPLOSIVE MATERIALS CODE, LATEST EDITION, AND THE REQUIREMENTS OF THE STORAGE AND USE PERMIT ISSUED TO THE CONTRACTOR BY THE CITY FIRE MARSHALL. IN THE EVENT OF A DISCREPANCY, THE MORE STRINGENT REQUIREMENTS GOVERN.
- 1.03 SUBMITTALS: PROVIDE THE FOLLOWING IN A TIMELY MANNER IN ACCORDANCE WITH THE APPROVED SUBMITTALS SCHEDULE AS SPECIFIED IN DIVISION 1 GENERAL REQUIREMENTS.
 - A. SUBMITTAL: A DETAILED BLASTING PLAN AND SCHEDULE INCLUDING PROCEDURES PROPOSED AND QUALIFICATIONS AND REFERENCES OF BLASTING PERSONNEL.
 - B. SUBMITTAL: A DETAILED PLAN FOR CROSSING STREAMS FOR ACCESS TO CONSTRUCTION SITES.
 - C. SUBMITTAL: A DETAILED EROSION AND SEDIMENTATION CONTROL PLAN FOR THE PROJECT.
 - D. SUBMITTAL: FORMAL REGISTRATION STATEMENT AND DETAILED STORMWATER POLLUTION PREVENTION PLAN PREPARED IN ACCORDANCE WITH VPDES GENERAL PERMIT REQUIREMENTS FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
 - E. SUBMITTAL: STABILIZATION AND SEPARATION FABRIC
 - F. SUBMITTAL: DRAINAGE FABRIC
 - G. SUBMITTAL: METALLIC LOCATING TAPE
 - H. SUBMITTAL: PRIOR TO PIPE LAYING OPERATIONS, THE CONTRACTOR SHALL LEASE FOR THE CITY ONE SEISMOGRAPH AND ACCESSORIES.
- 1.04 COMPACTION TESTS: IN THE COURSE OF BACKFILLING TRENCHES FOR UTILITY INSTALLATIONS, CONSTRUCTING EMBANKMENTS FOR ROADWAYS, AND PLACING AGGREGATE BASE, THE ENGINEER MAY PERFORM "FIELD DENSITY DETERMINATIONS" OR COMPACTION TESTS. WHEN COMPACTION TESTS ARE CALLED FOR BY THE ENGINEER, THE LOCATION OF THE TESTS WILL BE DETERMINED BY THE ENGINEER AND THE CONTRACTOR SHALL COOPERATE FULLY. FIELD DENSITY DETERMINATIONS SHALL BE PERFORMED IN ACCORDANCE WITH AASHTO T191, T205, OR T214, MODIFIED TO INCLUDE MATERIAL SIZES USED IN THE LABORATORY DETERMINATION OF DENSITY; WITH NUCLEAR FIELD DENSITY TESTING DEVICE; OR BY OTHER APPROVED METHODS. WHEN THE NUCLEAR FIELD DENSITY TESTING DEVICE IS USED, DENSITY DETERMINATIONS FOR THE MATERIAL WILL BE RELATED TO THE DENSITY OF THE SAME MATERIAL TESTED IN ACCORDANCE WITH VTM-1, VTM-10, OR VTM-12 AND A CONTROL STRIP WILL NOT BE REQUIRED. WHEN THE TEST RESULTS INDICATE

THAT THE DENSITY IS LESS THAN THE PERCENT SPECIFIED, THE CONTRACTOR SHALL EXCAVATE AND RE-COMPACT THE AREAS WHICH HAVE FAILED AT NO EXPENSE TO THE OWNER. WHENEVER A TEST FAILS TO MEET THE REQUIRED DENSITY, THE CONTRACTOR SHALL PAY FOR RETESTING THE AREAS AFTER CORRECTIVE ACTION HAS BEEN TAKEN.

1.05 UNDERGROUND UTILITIES

- A. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR EXACT LOCATION. EXCAVATION TO CONFIRM ELEVATIONS OF EXISTING SANITARY LINES MAY BE REQUIRED PRIOR TO LAYING NEW SANITARY SEWERS TO CONFIRM DEPTHS OF EXISTING SEWER LINES, PARTICULARLY ON DEAD END LINE SEGMENTS WHERE TERMINAL ELEVATIONS ARE UNKNOWN.
- B. LOCATE EXISTING UTILITIES, CULVERTS, AND STRUCTURES, ABOVE OR BELOW GROUND, BEFORE ANY EXCAVATION STARTS. COORDINATE WORK WITH UTILITY COMPANIES. PROTECT, MAINTAIN IN SERVICE, AND PREVENT DAMAGE TO UTILITIES NOT DESIGNATED TO BE REMOVED. WHEN UTILITIES ARE ENCOUNTERED AND ARE NOT SHOWN ON DRAWINGS OR WHEN LOCATIONS DIFFER FROM THOSE SHOWN ON DRAWINGS, NOTIFY THE OWNER FOR INSTRUCTIONS BEFORE PROCEEDING. THE CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE ANY DAMAGE TO EXISTING UTILITIES, INCLUDING SERVICE CONNECTIONS.
- 1.06 EXCAVATION SHALL BE CLASSIFIED AS COMMON OR ROCK ACCORDING TO THE FOLLOWING.
 - A. COMMON EXCAVATION CONSISTS OF EXCAVATION OF ALL OTHER MATERIALS ENCOUNTERED NOT CLASSIFIED AS ROCK EXCAVATION OR UNAUTHORIZED EXCAVATION.
 - B. ROCK EXCAVATION CONSISTS OF ALL SOLID ROCK THAT CANNOT BE EXCAVATED WITHOUT CONTINUOUS AND SYSTEMATIC DRILLING AND BLASTING OR CONTINUOUS USE OF ROCK EXCAVATION EQUIPMENT. BOULDERS 1 CUBIC YARD OR MORE IN VOLUME, SOLID ROCK, ROCK IN LEDGES, AND ROCK HARD CEMENTITIOUS AGGREGATE DEPOSITS ARE TYPICAL OF THIS MATERIAL.
 - C. ROCK EXCAVATION SHALL NOT BE PERFORMED UNTIL THE OWNER HAS VERIFIED THAT ROCK EXCAVATION IS REQUIRED AND HAS MEASURED THE QUANTITY OF ROCK EXCAVATION.
 - D. INTERMITTENT DRILLING OR BLASTING THAT MAY BE PERFORMED MERELY TO INCREASE PRODUCTION WILL BE CLASSIFIED AS COMMON EXCAVATION.
- 1.07 UNAUTHORIZED EXCAVATION CONSISTS OF REMOVAL OF MATERIALS BEYOND INDICATED SUBGRADE ELEVATIONS OR SIDE DIMENSIONS, WITHOUT SPECIFIC APPROVAL OF THE OWNER. UNAUTHORIZED EXCAVATION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
- FOR TRENCHES, THE PAY WIDTH FOR EXCAVATIONS SHALL BE THE ACTUAL WIDTH OF EXCAVATION AT GROUND LEVEL OR THE OUTSIDE NOMINAL DIAMETER OF THE PIPE PLUS 24 INCHES, WHICHEVER IS LESS, FOR PIPES 8 INCHES AND LARGER. FOR PIPES 6 INCHES AND SMALLER, THE PAY WIDTH SHALL BE 24 INCHES OR THE ACTUAL WIDTH OF EXCAVATION AT GROUND LEVEL, WHICHEVER IS LESS. WHEN PAY WIDTH IS NOT AN EVEN FOOT OR HALF FOOT, IT SHALL BE INCREASED TO THE NEAREST FOOT OR HALF FOOT. THE CONTRACTOR'S UNIT PRICES SHALL INCLUDE COSTS FOR WORK REQUIRED OUTSIDE THE PAY WIDTH LIMITS DESCRIBED ABOVE TO COVER EXTRA EXCAVATION AND PAVEMENT PATCHING REQUIRED DUE TO METHODS OF CONSTRUCTION, SAFETY, ETC. ALL AREAS DISTURBED OUTSIDE THE PAY WIDTH SHALL BE RESTORED TO ORIGINAL CONDITION OR AS SPECIFIED, AT THE

CONTRACTOR'S EXPENSE, NO ADDITIONAL AREA SHALL BE ADDED TO THE PAY WIDTH DESCRIBED ABOVE TO REIMBURSE THE CONTRACTOR FOR EXCAVATION OR RESTORATION COSTS.

- 2. PRODUCTS
- 2.01 CRUSHER RUN AGGREGATE SHALL BE SIZE NO. 25 OR NO. 26 AS DEFINED IN VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 205, "CRUSHER RUN AGGREGATE."
- 2.02 PIPE BEDDING FILL SHALL MEET REQUIREMENTS FOR COARSE AGGREGATES, ASTM C 33, SIZE NO. 57, 68, 78 OR SMALLER.
- 2.03 COARSE AGGREGATE FILL SHALL BE SIZE NO. 1 AS DEFINED IN VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 203, "COARSE AGGREGATE."
- 2.04 AGGREGATE FILL SHALL BE TYPE I, SIZE 21 OR 21A, DENSE GRADED AGGREGATE BASE MATERIAL AS DEFINED IN VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 208, "SUBBASE AND AGGREGATE BASE MATERIAL."
- 2.05 CLEAN EARTH FILL SHALL BE FREE OF DEBRIS, ROOTS, FROZEN MATERIALS, ORGANIC MATTER, ROCK OR GRAVEL LARGER THAN 1-INCH IN ANY DIMENSION, OR OTHER HARMFUL MATTER.
- 2.06 EARTH FILL SHALL BE FREE OF DEBRIS, ROOTS, FROZEN MATERIALS, ORGANIC MATTER, ROCK LARGER THAN 5 INCHES IN ANY DIMENSION, OR OTHER HARMFUL MATTER.
- 2.07 SELECT BORROW SHALL CONSIST OF APPROVED MATERIAL REQUIRED FOR THE CONSTRUCTION OF EMBANKMENTS FOR THE ADDITION OF TOPSOIL LAYERS OR FOR OTHER PORTIONS OF THE WORK AND SHALL BE OBTAINED FROM AN APPROVED OFF SITE SOURCE. UNLESS OTHERWISE SPECIFICALLY DESIGNATED ON THE DRAWINGS OR AUTHORIZED BY THE ENGINEER, THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR OBTAINING BORROW AND PAY ALL COSTS INVOLVED.
- 2.08 CLASS I RIPRAP SHALL BE VDOT DRY RIPRAP, CLASS I, AND CONSIST OF STONES OR BLOCKS WEIGHING BETWEEN 50 AND 150 POUNDS EACH, WITH ENOUGH SMALL PIECES TO FILL IN THE VOID SPACES BETWEEN THE LARGER STONES.
- 2.09 CLASS II RIPRAP SHALL BE VDOT DRY RIPRAP, CLASS II, AND CONSIST OF STONES OR BLOCKS WEIGHING BETWEEN 150 AND 500 POUNDS EACH, WITH ENOUGH SMALL PIECES TO FILL IN THE VOID SPACES BETWEEN THE LARGER STONES.
- 2.10 GEOTEXTILE FABRIC
 - A. GEOTEXTILE FABRIC SHALL BE PROTECTED FROM MUD, DIRT, DUST, SUNLIGHT, AND DEBRIS DURING TRANSPORT AND STORAGE. MATERIAL SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS; RESISTANT TO MILDEW, ROT, INSECTS, AND RODENTS; AND BIOLOGICALLY AND THERMALLY STABLE. GEOTEXTILE FABRIC FOR SUBSURFACE INSTALLATION SHALL NOT BE EXPOSED TO DIRECT SUNLIGHT FOR MORE THAN 24 HOURS DURING INSTALLATION.
 - B. TENSILE STRENGTH REQUIREMENTS SHALL BE IN THE MACHINE AND CROSS-MACHINE DIRECTIONS.
 - (1) GEOTEXTILE FABRIC FOR USE IN SILT FENCES, SILT BARRIERS, OR FILTER BARRIERS: FABRIC SHALL CONTAIN ULTRAVIOLET INHIBITORS AND STABILIZERS TO PROVIDE AT LEAST 6 MONTHS OF EXPECTED, USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 DEGREE F TO 120 DEGREES F. THE TENSILE STRENGTH OF THE MATERIAL AFTER 6 MONTHS

OF INSTALLATION SHALL BE AT LEAST 50 PERCENT OF THE INITIAL. STRENGTH.

a) SILT FENCES:

PHYSICAL TEST REQUIREMENTS PROPERTY METHOD (MIN.) FILTERING EFFICIENCY VTM 51 75 PERCENT FLOW RATE VTM 51 0.2GAL./SQ. FT./MIN. TENSILE STRENGTH AT

20% (MAX.) ELONGATION VTM 52 EXTRA STRENGTH:

STANDARD STRENGTH:

MIN.60 LB./LIN. INCH MIN.30 LB./LIN. INCH

b) SILT BARRIERS AND FILTER BARRIERS (INLET PROTECTION):

PHYSICAL TEST REQUIREMENTS PROPERTY METHOD (MIN.) FILTERING EFFICIENCY VTM 51 75 PERCENT FLOW RATE VTM 51 0.3GAL./SQ. FT./MIN.

TENSILE STRENGTH AT 20% (MAX.) ELONGATION VTM 52

MIN.30 LB./LIN. INCH

(2) GEOTEXTILE FOR USE UNDER RIPRAP, (BEDDING MATERIAL):

PHYSICAL TEST REQUIREMENTS PROPERTY METHOD (MIN.)

APPARENT OPENING SIZE ASTM D 4751 EQUAL TO OR GREATER THAN NO. 50 SIEVE

TENSILE STRENGTH AT 20% (MAX.) ELONGATION

VTM 52

MIN. 30 LB./LIN.

INCH

PUNCTURE STRENGTH

ASTM D 4833

MIN. 80 LB.

SEAMS SHALL BE EQUAL IN STRENGTH TO THE BASIC MATERIAL.

ADDITIONAL FABRIC MATERIAL OR NONCORROSIVE STEEL WIRE MAY BE INCORPORATED INTO FABRIC TO INCREASE OVERALL STRENGTH.

(3) GEOTEXTILE DRAINAGE FABRIC, (FOR UNDERDRAIN CONSTRUCTION):

PHYSICAL TEST REQUIREMENTS PROPERTY METHOD (MIN.) APPARENT OPENING SIZE ASTM D 4751 EQUAL TO OR GREATER THAN NO. 30 SIEVE MIN. 0.51 SEC. 1 PERMITTIVITY ASTM 4491 TENSILE STRENGTH AT VTM 52 MIN. 25 LB./LIN. INCH 20% (MAX.) ELONGATION

(4) SOIL RETENTION COVERINGS: (VDOT EC-2)

202106.96 02220/4

OPENING SIZE 0.60 IN. LENGTHWISE 0.90 IN. CROSSWISE

WEIGHT 0.90 LBS/SQ. YARD

EXCELSIOR MAT FIBER LENGTH ABSORBENCY 8 TIMES FIBER WEIGHT

COIR FIBER MAT COIR FIBER 0.5 LBS/SQ.YD. POLYPROPYLENE MESH

(5) TURF REINFORCEMENT MAT: (TRM)

a) SLOPE STABILIZATION UP TO 6 FEET IN HEIGHT:

ULTIMATE TENSILE STRENGTH	ASTM D4595	200 LBS./LIN. INCH
APPARENT OPENING SIZE	ASTM D4751	EQUAL OR SMALLER THAN 0.85 MM
SECANT MODULUS	ASTM D4595	1,700 LBS./LIN. INCH @10% STRAIN
SOIL FABRIC FRICTION ANGLE (OTTAWA SAND)	ASTM D5321	24 DEG. (MIN)
TEAR STRENGTH	ASTM D4533	75 LBS. (MIN)
PUNCTURE STRENGTH	ASTM D4833	75 LBS. (MIN)

- b) TURF REINFORCING MAT FOR CHANNEL LINING SHALL BE NORTH AMERICAN GREEN C125 OR APPROVED EQUAL, UNLESS SPECIFICALLY NOTED OTHERWISE ON PROJECT PLANS.
- c) RODENT DETERRENT TURF REINFORCING MAT SHALL BE NORTH AMERICAN GREEN P300 OR APPROVED EQUAL INCORPORATING POLYPROPYLENE FIBERS TO RESIST RODENT DAMAGE.
- 2.11 FLOWABLE FILL SHALL BE A PORTLAND CEMENT AND SAND MIXTURE LIQUID ENOUGH TO FLOW INTO AREA BEING STABILIZED, SELF LEVELING AND HAVE AN MINIMUM 28 DAY FULLY CURED STRENGTH OF 225 POUNDS PER SQUARE INCH.
- 2.12 METALLIC LOCATING TAPE SHALL BE ACID AND ALKALI RESISTANT POLYETHYLENE FILM TAPE, SIX INCHES WIDE AND 4 MILS THICK, CONTINUOUSLY INSCRIBED WITH A DESCRIPTION OF THE UTILITY, WITH METALLIC CORE ENCASED IN A PROTECTIVE JACKET FOR CORROSION PROTECTION, DETECTABLE BY METAL DETECTOR WHEN TAP IS BURIED UP TO 30 INCHES DEEP, TAPE FOR MARKING WATER LINES SHALL BE BLUE, TAPE FOR MARKING SEWER SYSTEMS SHALL BE GREEN.

3. EXECUTION

3.01 STRIP EXISTING TOPSOIL, LEAF MOLD, AND ORGANIC MATERIALS MEETING TOPSOIL REQUIREMENTS OF SECTION 02930 - SEEDING. DEPOSIT IN STORAGE PILES SEPARATE FROM OTHER EXCAVATED MATERIAL FOR REUSE DURING SITE RESTORATION. IN DEVELOPED AREAS, TOPSOIL SHALL BE STOCKPILED ON LOCATION AT EACH PROPERTY TO ENSURE IT IS REINSTATED TO ORIGINAL LOCATION.

- 3.02 WHEN CHANGES ARE AUTHORIZED FROM THE ELEVATIONS AND DIMENSIONS SHOWN ON THE DRAWINGS RESULTING IN MORE EXCAVATION THAN ORIGINALLY INDICATED, THE CONTRACTOR SHALL BE PAID FOR THE ADDITIONAL VOLUME OF EXCAVATION. WHEN AUTHORIZED CHANGES RESULT IN A DECREASED VOLUME, THE CONTRACTOR SHALL ALLOW A CREDIT FOR THE OMITTED VOLUME. THE EXTRA OR CREDIT SHALL BE BASED UPON UNIT PRICES IN THE BID FORM FOR COMMON, EXTRA DEPTH OR ROCK EXCAVATION AS APPROPRIATE.
- 3.03 WHERE UNAUTHORIZED EXCAVATIONS HAVE BEEN CARRIED BEYOND POINTS REQUIRED, RESTORE THESE AREAS TO THE ELEVATIONS AND DIMENSIONS SHOWN ON THE DRAWINGS WITH MATERIAL APPROVED BY THE ENGINEER, COMPACT AND RESTORE AS SPECIFIED AT CONTRACTOR'S EXPENSE.
- 3.04 WHERE SOFT, YIELDING, OR OTHERWISE UNSATISFACTORY MATERIAL IS ENCOUNTERED IN THE TRENCH BOTTOM, THE CONTRACTOR SHALL REMOVE THE MATERIAL TO SUCH DEPTH AS DETERMINED BY THE ENGINEER AND REPLACE WITH #57/#67 COARSE AGGREGATE FILL. REMOVAL OF UNSATISFACTORY MATERIAL FROM THE TRENCH BOTTOM WILL BE PAID AS COMMON EXCAVATION FOR TRENCH DEPTHS LESS THAN 8 FEET, EXTRA DEPTH TRENCH EXCAVATION FROM 8 TO 16 FEET FOR TRENCHES FROM 8 TO 16 FEET DEEP, OR EXTRA DEPTH TRENCH EXCAVATION GREATER THAN 16 FEET DEEP FOR TRENCHES GREATER THAN 16 FEET DEEP. EXTRA AGGREGATE FILL REQUIRED TO REPLACE UNSATISFACTORY MATERIAL WILL BE PAID AS COARSE AGGREGATE FILL, (#57/#67 AGGREGATE).
- 3.05 WHERE REMOVAL OF UNSATISFACTORY MATERIAL IS DUE TO FAULT OR NEGLIGENCE OF THE CONTRACTOR, BY INADEQUATE SHORING OR BRACING, DEWATERING, MATERIAL STORAGE, OR OTHER FAILURE TO MEET SPECIFIED REQUIREMENTS, WORK SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.

3.06 EXCAVATION

- A. CRUSHER RUN AGGREGATE, OR ASPHALT MILLINGS SHALL BE SPREAD ON PAVEMENT BEFORE STOCKPILING EXCAVATED MATERIAL ON THE PAVEMENT. THE CRUSHER RUN AGGREGATE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE VARIOUS UTILITIES, SIDEWALKS, CURB AND GUTTER, DRIVEWAY ENTRANCES, ETC., AND WILL NOT BE MEASURED FOR SEPARATE PAYMENT.
- B. EXCAVATE TRENCHES BELOW BOTTOM OF PIPE FOR PIPE BEDDING FILL IN ACCORDANCE WITH STANDARD DETAILS 26.01 AND 27.01. IN EXCAVATING FOR THE TRENCH, IT IS ESSENTIAL THAT THE TRENCH BOTTOM BE UNIFORM IN GRADE AND REMAINS STATIC DURING BACKFILLING AND UNDER ALL SUBSEQUENT TRENCH CONDITIONS. THE GRADE OF THE BOTTOM OF THE TRENCH SHALL BE GRADED TO WITHIN 0.04 FOOT (1/2-INCH) OF THE PLAN SPECIFIED GRADE. THE STONE SHALL BE GRADED TO THE SAME TOLERANCE.
- C. PAVEMENT, CURB, GUTTER, AND SIDEWALK MATERIAL EXCAVATED ALONG THE TRENCH SHALL NOT BE USED AS BACKFILL MATERIAL.
- D. ROCK THAT HAS BEEN REMOVED FROM THE TRENCH BY BLASTING OR WITH ROCK EXCAVATION EQUIPMENT SHALL NOT BE USED AS BACKFILL MATERIAL, PROPERLY SIZED BLAST ROCK, MEETING VDOT STANDARDS FOR CLASS I OR CLASS II RIPRAP MAY BE USED ON THE PROJECT AS AUTHORIZED BY THE ENGINEER, PAYMENT FOR PROPERLY SIZED AND PLACED BLAST ROCK USED AS RIPRAP WILL BE IN ACCORDANCE WITH CONTRACT UNIT PRICES FOR THESE ITEMS, PROVIDED ALL VDOT STANDARDS AND CONTRACT INSTALLATION REQUIREMENTS ARE FOLLOWED.

- E. KEEP EXCAVATIONS FREE OF WATER WHILE WORK IS BEING PERFORMED. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. DO NOT USE EXCAVATED TRENCHES AS TEMPORARY DRAINAGE DITCHES. REROUTE SURFACE WATER RUNOFF AWAY FROM OR AROUND EXCAVATED AREAS.
- F. WHERE UNDERGROUND STREAMS OR SPRINGS ARE FOUND, PROVIDE TEMPORARY DRAINAGE AND NOTIFY THE ENGINEER.
- G. REMOVE FROM PROJECT SITE AND DISPOSE OF MATERIAL UNSATISFACTORY FOR REUSE, INCLUDING ALL TRASH AND EXCESS MATERIAL WHICH CANNOT BE REUSED CONTINUOUSLY WITH THE PROGRESS OF THE WORK. KEEP ALL PAVEMENTS AND AREA ADJACENT TO WORK CLEAN AND FREE FROM MUD, DIRT, AND DEBRIS AT ALL TIMES. DISPOSE OF ALL UNSATISFACTORY MATERIAL TO A SITE WHICH LEGALLY CAN ACCEPT SUCH MATERIAL AS FILL. ADHERE TO ALL APPLICABLE LAWS AND ORDINANCES REGARDING PERMITTING OF WASTE OR FILL SITES, EROSION CONTROL, ZONING, ETC. AS MAY BE APPLICABLE.
- H. REMOVE SHORING AND ALL FORM MATERIALS.
- I. WHERE ROCK IS ENCOUNTERED SO THAT A MANHOLE, VAULT, OR OTHER STRUCTURE WILL BEAR ON ROCK, THE ROCK SHALL BE REMOVED TO A DEPTH OF 12 INCHES BELOW THE FOUNDATION OR FOOTING AND 12 INCHES OF COMPACTED COARSE AGGREGATE SHALL BE PLACED BETWEEN THE STRUCTURE AND ROCK. WHERE ONLY A PART OF THE FOUNDATION WILL BEAR ON ROCK, THE ROCK SHALL BE REMOVED TO A DEPTH OF 12 INCHES BELOW THE STRUCTURE FOOTING OR FOUNDATION AND 12" OF COMPACTED COARSE AGGREGATE SHALL BE PLACED BETWEEN THE STRUCTURE AND ROCK.
- J. IN AREAS WHERE TRENCHING FOR PIPES WILL BE IN FILLS, THE FILLS SHALL BE BROUGHT TO AN ELEVATION OF AT LEAST 12 INCHES ABOVE THE TOP OF THE PIPE, AND THEN THE TRENCH EXCAVATED IN THE COMPACTED FILL, AS HEREIN SPECIFIED FOR TRENCH EXCAVATION.

3.07 PIPE BEDDING

- A. BEDDING FOR PIPE SHALL BE COARSE AGGREGATE FILL, #57 OR #67 STONE.
- B. PLACE REQUIRED PIPE BEDDING FILL IN ACCORDANCE WITH STANDARD DETAILS. BEDDING TO BE PLACED TO CROWN OF ALL PVC PIPING. IF THE TRENCH SUBGRADE IS FOUND TO BE SOFT, SPONGY, EXCESSIVELY WET, UNSTABLE OR IN ANY OTHER WAY UNFIT SUCH THAT THERE IS INADEQUATE PIPE SUPPORT, THE MATERIAL SHALL BE REMOVED FOR THE FULL WIDTH OF THE TRENCH, AND THE EXCAVATED AREA SHALL BE STRENGTHENED FOR FOUNDATION PURPOSES BY FURNISHING AND PLACING EITHER APPROVED COARSE AGGREGATE, CONCRETE CRADLE, CONCRETE SOIL STABILIZATION, CONCRETE ENCASEMENT, PIERS, OR A COMBINATION OF THESE MATERIALS AS DIRECTED BY THE ENGINEER. IF UNSUITABLE BEDDING CONDITIONS ARE THE RESULT OF FAULT, NEGLIGENCE OR POOR CONSTRUCTION METHODS, THESE IMPROVEMENTS SHALL BE CONDUCTED AT NO ADDITIONAL COST TO THE OWNER.
- C. COMPACT PIPE BEDDING BY TAMPING OR RODDING TO PREVENT SETTLEMENT.
- D. EXCAVATE BELL HOLES IN THE BEDDING TO INSURE THAT THE PIPE BARREL IS FULLY SUPPORTED BY THE BEDDING.
- E. WHEN ROCK IS ENCOUNTERED IN TRENCH BOTTOM IT SHALL BE REMOVED TO A DEPTH OF 6 INCHES BELOW PIPE AND 6 INCHES OF COARSE AGGREGATE FILL SHALL BE PLACED BETWEEN THE BETWEEN THE PIPE AND TRENCH BOTTOM.

F. PROVIDE A MINIMUM OF 12 INCHES OF COMPACTED COARSE AGGREGATE BEDDING FOR ALL STRUCTURES, SHAPED TO PROVIDE UNIFORM SUPPORT ACROSS THE ENTIRE BASE OF THE STRUCTURE.

3.08 COMPACTION

- A. COMPACT EACH LAYER OF FILL OR BACKFILL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698 (AASHTO T-99).
 - (1) 100 PERCENT BENEATH AND WITHIN 25 FEET OF BUILDINGS STRUCTURES, AND DRAINAGE APPURTENANCES, INCLUDING THOSE SHOWN FOR FUTURE CONSTRUCTION
 - (2) 95 PERCENT BENEATH PAVEMENTS, WALKS, AND ROAD SHOULDERS, INCLUDING THOSE SHOWN FOR FUTURE CONSTRUCTION
 - (3) 90 PERCENT IN OTHER UNPAVED AREAS
- B. COMPACT SOIL MATERIALS USING EQUIPMENT SUITABLE FOR MATERIALS TO BE COMPACTED AND WORK AREA LOCATIONS. BACKFILL MATERIALS ARE TO BE MAINTAINED WITHIN +/- 20 PERCENT OF OPTIMUM MOISTURE CONTENT WHEN BACKFILLING. USE POWER-DRIVEN HAND TAMPERS FOR COMPACTING MATERIALS ADJACENT TO STRUCTURES. TRENCH BACKFILL SHALL BE COMPACTED IN LIFTS TO ACHIEVE UNIFORM DENSITY, UNCOMPACTED LIFTS SHALL NOT EXCEED 12 INCHES IN HEIGHT, UNDER PAVEMENT AND STRUCTURES UNCOMPACTED LIFTS SHALL NOT EXCEED 8 INCHES. MOISTURE CONTENT SHALL BE MONITORED DURING CONSTRUCTION TO ENSURE MAINTENANCE OF OPTIMUM MOISTURE LEVELS.

3.09 BACKFILL

- A. OBTAIN THE PARTICULAR BACKFILL MATERIAL REQUIRED FROM EXCAVATION STOCKPILES, BORROW AREAS, OR OTHER APPROVED SOURCES.
- B. BACKFILL TRENCH TO A COMPACTED DEPTH OF 1 FOOT OVER THE PIPE WITH CLEAN EARTH FILL. BACKFILL SHALL BE PLACED BY HAND UNIFORMLY ON EACH SIDE OF THE PIPE AND COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES. DO NOT BACKFILL ON MUDDY OR FROZEN SOIL, OR WITH MUDDY OR FROZEN SOIL.
- C. BACKFILL TRENCH FROM 1 FOOT ABOVE THE PIPE TO GRADE WITH EARTH FILL FREE OF STONES OR OTHER MATERIAL LARGER THAN 5 INCHES OR 1/2 THE LAYER THICKNESS IN ANY DIMENSION, WHICHEVER IS SMALLER. LAYERS SHALL NOT EXCEED 12 INCHES, EXCEPT THAT UNDER ROAD SHOULDERS AND UNDER EXISTING OR FUTURE PAVED AREAS AND STRUCTURES, LAYERS SHALL NOT EXCEED 6 INCHES. BACKFILL SHALL BE COMPACTED TO THE DENSITY SPECIFIED FOR THE AREAS IN WHICH IT IS LOCATED EXCEPT THAT MINIMUM COMPACTION IN ANY AREA SHALL BE TO THE DENSITY OF THE ADJACENT SOIL.
- D. EXCAVATE DEPRESSIONS CAUSED BY REMOVAL OF STUMPS OR OTHER CLEARING OPERATIONS TO FIRM SUBGRADE, FILL WITH CLEAN EARTH FILL, AND COMPACT AS SPECIFIED.
- E. PLACE BACKFILL MATERIALS EVENLY ADJACENT TO STRUCTURES. TAKE CARE TO PREVENT WEDGING ACTION OF THE BACKFILL AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT. REMOVE SHEETING AND SHORING GRADUALLY AS THE TRENCH IS FILLED TAKING PRECAUTIONS TO

PREVENT SIDES OF TRENCH FROM SLIDING INTO THE TRENCH ONTO OR AGAINST THE PIPE.

- F. COMPACT EACH LAYER OF BACKFILL TO THE REQUIRED DENSITY.
- G. REPLACE TOPSOIL AND/OR PROVIDE NEW TOPSOIL TO AT LEAST 6 INCHES OR THE ORIGINAL DEPTH WHICHEVER IS GREATER IN AREAS TO BE SEEDED. PROVISION OF ADDITIONAL TOPSOIL TO ENABLE INSTALLATION OF 6-INCH LAYER WILL BE PAID FOR AS SELECT BORROW. THE DEPTH OF TOPSOIL EXISTING PRIOR TO EXCAVATION AS DETERMINED FROM SOIL HORIZON MEASUREMENTS IN THE TRENCH WALL SHALL BE DEDUCTED FROM THIS VOLUME IF ORIGINAL SOIL IS NOT REUSED. PROVISION OF NEW TOPSOIL TO REPLACE EXISTING MATERIAL WASTED BY THE CONTRACTOR SHALL BE AT CONTRACTOR EXPENSE. TOPSOIL SHALL BE FREE OF ROCKS AND RAKED TO A SMOOTH UNIFORM SURFACE.
- H. AGGREGATE FILL PLACED UNDER MANHOLES, INLETS OR OTHER STRUCTURES SHALL BE COMPACTED WITH TWO PASSES OF VIBRATORY PLATE OR VIBRATORY ROLLER.
- I. LOCATING TAPE SHALL BE INSTALLED OVER ALL NON-METALLIC MAINS AND SERVICE LATERALS AND SHALL BE LOCATED NO MORE THAN 12 INCHES BELOW FINAL GRADE.
- J. FLOWABLE FILL SHALL BE USED AS SPECIFIED ON PROJECT PLANS OR AS DIRECTED BY THE ENGINEER, FLOWABLE FILL SHALL BE ALLOWED TO CURE FOR A MINIMUM OF TWO HOURS PRIOR TO CONTINUING BACKFILL OPERATIONS. FINAL GRADING OVER FLOWABLE FILL SHALL BE DELAYED BY AT LEAST 24 HOURS TO ALLOW FOR SHRINKAGE AND CONCRETE HYDRATION.
- K. REUSEABLE MATERIALS INCLUDE PAVING BLOCKS, BELGIUM BLOCKS, BLUESTONE, BRICK, CASTINGS, PIPE, ETC. THAT ARE REMOVED DURING EXCAVATION AND MAY BE REUSEABLE ON THIS PROJECT OR FUTURE PROJECTS AS DETERMINED BY THE ENGINEER SHALL BE PRESERVED AT NO ADDITIONAL COST TO THE CITY. UNNECESSARY ABUSE AND DAMAGE TO THESE ITEMS SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND THE COST OF REPLACEMENT MAY BE DEDUCTED FROM THE RETAINAGE AT THE ENGINEERS DIRECTION.

3.10 GRADING

- A. UNIFORMLY GRADE ALL AREAS WITHIN THE LIMITS DESIGNATED ON THE DRAWINGS, INCLUDING ADJACENT TRANSITION AREAS. FINISH SURFACES WITHIN SPECIFIED TOLERANCES WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN AND EXISTING GRADES.
- B. FINISH ALL SURFACES FREE FROM IRREGULAR CHANGES, ROCKS, OR DEBRIS.
- C. FINISH SUBGRADE AREAS TO RECEIVE TOPSOIL TO WITHIN 0.10 FOOT OF REQUIRED SUBGRADE ELEVATIONS.
- D. SHAPE SUBGRADE UNDER WALKS TO LINE, GRADE, AND CROSS-SECTION TO WITHIN 0.10 FOOT OF REQUIRED SUBGRADE ELEVATIONS.
- E. SHAPE SUBGRADE UNDER PAVEMENT TO LINE, GRADE, AND CROSS-SECTION TO WITHIN 1/2-INCH OF REQUIRED SUBGRADE ELEVATIONS.
- F. PROTECT NEWLY GRADED AREAS FROM TRAFFIC AND EROSION. REPAIR AND REESTABLISH GRADE IN SETTLED, ERODED, OR RUTTED AREAS TO THE SPECIFIED TOLERANCES. IF THE CONTRACTOR SHALL FAIL TO MAINTAIN ANY

TRENCH WITHIN 2 DAYS AFTER RECEIPT OF WRITTEN NOTICE FROM THE ENGINEER, THE ENGINEER MAY REFILL DEPRESSIONS AND THE COST OF SUCH WORK MAY BE RETAINED FROM MONIES DUE THE CONTRACTOR OR BILLED DIRECTLY TO THE CONTRACTOR. IN CASE OF EMERGENCY, THE OWNER MAY REFILL ANY DANGEROUS DEPRESSIONS WITHOUT PRIOR NOTICE TO THE CONTRACTOR.

G. WHERE COMPACTED AREAS ARE DISTURBED BY SUBSEQUENT CONSTRUCTION OR ADVERSE WEATHER, SCARIFY THE SURFACE, RESHAPE, AND COMPACT TO THE REQUIRED DENSITY. USE HAND TAMPER FOR RECOMPACTION OVER UNDERGROUND UTILITIES.

3.11 UTILITIES TO BE ABANDONED OR REMOVED

- A. WHEN UNDERGROUND UTILITIES ARE TO BE ABANDONED IN PLACE, PLUG, CAP, OR SEAL WITH CONCRETE AT THE "CONSTRUCTION LIMITS" OR AT POINTS SHOWN.
- B. REMOVE UNDERGROUND UTILITIES INDICATED ON THE DRAWINGS TO BE REMOVED, AND BACKFILL RESULTING EXCAVATION WITH SUITABLE MATERIAL COMPACTED AS SPECIFIED. PLUG, CAP, OR SEAL UTILITIES WITH CONCRETE AT THE CONSTRUCTION LIMITS OR AT POINTS SHOWN.
- C. THE COST OF REMOVING EXISTING MANHOLES AND PIPE TO ALLOW THE INSTALLATION OF NEW UTILITIES SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICES FOR SANITARY SEWER PIPE AND STORM SEWER PIPE.

3.12 EROSION CONTROL

- A. NO MORE THAN 300 FEET OF TRENCH SHALL BE OPEN AT ANY ONE TIME.
- B. NO DISTURBED AREA SHALL BE DENUDED FOR MORE THAN 7 CALENDAR DAYS.
- C. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE LINE. SOIL STABILIZATION SHALL ALSO BE APPLIED WITHIN 7 DAYS TO DENUDED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 15 DAYS. SOIL STABILIZATION PRACTICES INCLUDE VEGETATIVE ESTABLISHMENT, MULCHING, AND EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED.
- D. COMPLY WITH ALL LOCAL REQUIREMENTS AND WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS AS ADMINISTERED BY THE VIRGINIA SOIL AND WATER CONSERVATION BOARD TO CONTROL EROSION AND SEDIMENTATION.
- E. INSTALL SILT FENCES AROUND SOIL STOCKPILES AND EXCAVATIONS.
- F. ALL APPLICABLE EROSION AND SILTATION CONTROL MEASURES SHALL BE TAKEN PRIOR TO GRADING.
- G. PROTECT AND MAINTAIN STORM SEWER INLETS WITH SILT TRAPS.
- H. INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES AT THE CLOSE OF EACH WORK DAY AND AFTER EACH RAINSTORM. MAKE NECESSARY REPAIRS OR CLEAN UP IMMEDIATELY TO MAINTAIN THE EFFECTIVENESS OF THE DEVICE.
- I. WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, EASEMENT CONDITIONS, AND CONSTRUCTION METHODS, PLACE ALL EXCAVATED MATERIAL ON THE UPHILL

- SIDE OF THE TRENCH. WHEN THE SOIL IS PLACED ON THE DOWNHILL SIDE OF THE TRENCH, DIVERT MAXIMUM DRAINAGE TOWARD THE TRENCH.
- J. WATER DISCHARGED FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED DIRECTLY TO ANY STREAM OR WATER BODY. COMPLY WITH STATE MINIMUM STANDARD AND SPECIFICATION 3.26, DEWATERING STRUCTURE, OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992 EDITION. WHEN WORKING ADJACENT TO OR WITHIN A WATER BODY, COMPLY WITH STATE MINIMUM STANDARD AND SPECIFICATION 3.27, TURBIDITY CURTAIN, OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992 EDITION.
- K. COMPLY WITH PRACTICES OUTLINED IN THE PROJECT STORMWATER POLLUTION PREVENTION PLAN PREPARED IN ACCORDANCE WITH VPDES PERMIT REQUIREMENTS.
- RIPRAP SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 414 "RIPRAP" OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS. GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL RIPRAP. THE COST FOR SHAPING SUBGRADE FOR RIPRAP PLACEMENT IS INCLUDED IN THE UNIT COST OF RIPRAP, SHAPING ADJACENT AREAS WILL BE PAID FOR AS COMMON EXCAVATION IF OVER TWO INCHES OF ADJUSTMENT IS REQUIRED, OTHERWISE IT WILL BE PAID FOR AS SEEDING AND FINE GRADING.
- 3.14 PROTECT GRADED AREAS FROM THE ACTION OF THE ELEMENTS. SETTLEMENT OR OTHER DAMAGE THAT OCCURS PRIOR TO ACCEPTANCE OF THE WORK SHALL BE REPAIRED AND GRADES SATISFACTORILY REESTABLISHED.
- 3.15 REPAIR AFTER CLEANUP. UPON COMPLETION OF CONSTRUCTION WORK AND AFTER SPOILS AND DEBRIS HAVE BEEN REMOVED, REGRADE ANY AREAS DISTURBED BY THE OPERATIONS. REMOVE ALL TEMPORARY EROSION CONTROLS UPON FINAL STABILIZATION AS DIRECTED BY THE ENGINEER.

3.16 BLASTING

- A. THE CONTRACTOR SHALL PROVIDE A BLAST WARNING SIGNAL SYSTEM. THE BLAST WARNING SIGNAL SYSTEM SHALL CONSIST OF ONE OR MORE AIR HORNS LOCATED AT THE BLAST SITE. THE AIR HORN(S) SHALL BE AUDIBLE A MINIMUM OF 1 MILE FROM THE BLAST SITE. THE SIGNALS SHALL BE ONE LONG HORN 5 MINUTES PRIOR TO THE BLAST, ONE SHORT HORN 1 MINUTE PRIOR TO THE BLAST, AND ONE LONG HORN AFTER THE BLAST TO SIGNAL ALL CLEAR. THE CONTRACTOR SHALL ERECT TWO CLEAR AND LEGIBLE BLAST WARNING SIGNAL SIGNS AT LOCATIONS DETERMINED BY THE ENGINEER. THE SIGNS SHALL LIST THE BLAST WARNING SIGNAL SYSTEM, THE CONTRACTOR SUPERINTENDENT'S NAME AND TELEPHONE NUMBER, AND THE ENGINEER INSPECTOR'S NAME AND TELEPHONE NUMBER.
- B. THE CONTRACTOR SHALL EXCAVATE TEST PITS AT UP TO TWO REPRESENTATIVE LOCATIONS ALONG UTILITY ALIGNMENTS AND UP TO THREE LOCATIONS ADJACENT TO RAILROAD RIGHT-OF-WAYS TO DETERMINE IF THE ROCK IS "RIPPABLE" WITH A CATERPILLAR TRACKHOE 225 OR EQUIVALENT AND THE FEASIBILITY OF ROCK EXCAVATION BY "HOE RAMMING." IF THESE PROCEDURES DO NOT OFFER REASONABLE PRODUCTION FOR ROCK EXCAVATION, THEN BLASTING WILL BE ALLOWED UNLESS OTHERWISE INDICATED. REASONABLE PRODUCTION FOR ROCK EXCAVATION BY "HOE RAMMING" WILL BE DEFINED AS 5 OR MORE CUBIC YARDS PER HOUR.
- C. BLASTING SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR.
 QUALIFICATIONS, PROPOSED PROCEDURES, AND SCHEDULE SHALL BE SUBMITTED
 FOR APPROVAL AT LEAST 2 WEEKS PRIOR TO COMMENCING ANY BLASTING
 OPERATIONS.

- D. THE CONTRACTOR SHALL NOTIFY IN WRITING ALL PROPERTY OWNERS WITHIN 250 FEET OF THE PROPOSED BLAST AT LEAST 1 WEEK PRIOR TO THE PROPOSED BLAST AND VERBALLY ON THE DAY OF THE SCHEDULED BLAST. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, LYNCHBURG FIRE MARSHALL AND EMERGENCY OPERATIONS CENTER 48 HOURS PRIOR TO ANY PLANNED BLASTING.
- E. BLASTING SHALL BE LIMITED TO MID-MORNING HOURS ON DAYS OF CLEAR-TO-PARTLY CLOUDY SKIES WITH INCREASING SURFACE TEMPERATURE AND LIGHT WIND. BLASTING WILL NOT BE ALLOWED AFTER 3:30 P.M. BLASTING WILL NOT BE ALLOWED ON OVERCAST, LOW CEILING DAYS. THE CONTRACTOR SHALL PROVIDE MONITORING EQUIPMENT TO MONITOR ALL BLASTING. A COPY OF THE MONITOR RECORD SHALL BE GIVEN TO THE OWNER DAILY.
- F. THE USE OF UNCONFINED EXPLOSIVES SHALL BE PROHIBITED.
- G. THE MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITY SHALL BE 1.25 INCHES PER SECOND FOR ALL STRUCTURES LOCATED 0 TO 300 FEET FROM THE BLASTING SITE, THE MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITY SHALL BE 1.00 INCH PER SECOND FOR ALL STRUCTURES LOCATED 301 TO 5,000 FEET FROM THE BLASTING SITE. THE MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITY SHALL BE 0.75 INCH PER SECOND FOR ALL STRUCTURES LOCATED 5,001 FEET AND BEYOND FROM THE BLASTING SITE.
- H. TO MINIMIZE VIBRATION, MINIMUM SCALED DISTANCE (SD) OF 50 SHALL BE USED TO DETERMINE MAXIMUM EXPLOSIVE WEIGHT PER DELAY. A TEST BLAST SHALL BE CONDUCTED TO VERIFY THE SCALED DISTANCE. THE MAXIMUM EXPLOSIVE WEIGHT PER DELAY SHALL NOT EXCEED THE DISTANCE FROM THE BLAST TO THE NEAREST STRUCTURE DIVIDED BY 50 SQUARED. MAXIMUM EXPLOSIVE WEIGHT PER DELAY MAY BE REVISED PENDING OUTCOME OF TEST BLAST. TEST BLAST MONITORING SHALL BE AT THE EXPENSE OF THE OWNER. THE RECOMMENDATIONS INDICATED FOR BLASTING CRITERIA IN NO WAY RELIEVES THE CONTRACTOR OF HIS LIABILITY.
- I. THE PEAK OVERPRESSURE OR AIR BLAST SHALL NOT EXCEED 0.015 POUNDS PER SQUARE INCH OR THE MAXIMUM LIMITS SPECIFIED IN THE FOLLOWING TABLE:

AIRBLAST LIMITS

MEASUREMENT
LEVEL (DCB)
134 PEAK
133 PEAK
129 PEAK
105 PEAK

- J. PREBLAST MEETINGS MAY BE SCHEDULED BY THE ENGINEER TO DOCUMENT HOLE DEPTHS AND SPACING, CHARGE WEIGHT PER DELAY, SHOT SCHEDULING, AND WEATHER CONDITIONS. THE CONTRACTOR SHALL OBTAIN ACCURATE MEASURED DISTANCES FROM STRUCTURES TO CENTER OF BLAST AREA PRIOR TO DETERMINING THE SAFE MAXIMUM CHARGE-WEIGHT PER DELAY AND LOADING BLAST HOLES.
- K. PREBLAST AND POST BLAST SURVEYS WILL BE PERFORMED BY THE OWNER. THE CONTRACTOR MAY REVIEW THIS DATA AND SUPPLEMENT IT AS HE SEES FIT OR CONDUCT SEPARATE SURVEY AFTER WRITTEN PERMISSION IS OBTAINED FROM THE PROPERTY OWNERS. IN THIS EVENT, THE WRITTEN PERMISSION SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO ENTERING UPON PRIVATE PROPERTY.

THE PREBLAST AND POST BLAST SURVEYS WILL INCLUDE ALL OCCUPIED BUILDINGS WITHIN 250 FEET OF BLASTING AREAS. THE CONTRACTOR IS STRONGLY ENCOURAGED TO HAVE A REPRESENTATIVE PRESENT DURING THESE SURVEYS. THE PREBLAST AND POST BLAST SURVEYS PERFORMED BY THE OWNER IN NO WAY RELIEVE THE CONTRACTOR OF HIS LIABILITY.

- THE OWNER RESERVES THE RIGHT TO MONITOR PRODUCTION BLASTING. IN L. THIS EVENT, THE CONTRACTOR SHALL PROVIDE THE ENGINEER AMPLE NOTICE OF SCHEDULED BLASTS TO ALLOW SET-UP OF MONITORING EQUIPMENT.
- PRIOR TO PIPE LAYING OPERATIONS, THE CONTRACTOR SHALL LEASE FOR THE CITY ONE SEISMOGRAPH AND ACCESSORIES. THE SEISMOGRAPH SHALL BE "MINIMATE PLUS BASE UNIT" AS MANUFACTURED BY INSTANTEL OR AN APPROVED EQUAL. THE SEISMOGRAPH SHALL HAVE 300-EVENT CAPACITY AND FOUR CHANNELS, INTERNAL TRIAXIAL SENSOR, INSTALLATION SPIKES, LINEAR MICROPHONE WITH STAND, BLASTMATE III TO PC CONNECTING CABLE, OPERATOR MANUAL, BLASTWARE III COMPLIANCE MODULE AND OPERATOR MANUAL, AND AC ADAPTOR. ACCESSORIES SHALL BE ONE FASTENING PLATE FOR PRECISE LEVELING REQUIREMENTS INCLUDING CEILING AND WALL INSTALLATIONS; ONE STANDARD TRANSDUCER LEVELING PLATE WITH LEVELING FEET AND INTEGRATED SPIRIT LEVEL WHICH CAN BE USED WITH FLOOR, WALL, AND CEILING INSTALLATIONS; ONE EXTERNAL 12-VOLT DC BATTERY POWER SUPPLY CABLE; AND ONE 110-VOLT AC ADAPTOR. THE SEISMOGRAPH AND ACCESSORIES LEASE WILL NOT BE PAID AS A BID ITEM, BUT SHOULD BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE BIDS FOR "HOE-RAMMING" AND "BLASTING." THE CONTRACTOR SHALL HAVE THE SEISMOGRAPH CALIBRATED QUARTERLY. ANOTHER SEISMOGRAPH SHALL BE PROVIDED DURING THE CALIBRATION PROCESS. THE SEISMOGRAPH IS IN ADDITION TO CONTRACTOR'S MONITORING REQUIREMENTS STATED ABOVE.

END OF SECTION

SECTION 02500 - PAVING AND SURFACING

1. GENERAL

- 1.01 REFERENCE SPECIFICATIONS WHERE APPLICABLE TO WORK UNDER THIS SECTION ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:

 - B. AMERICAN SOCIETY FOR TESTING AND MATERIALS......ASTM
 - C. VIRGINIA DEPARTMENT OF TRANSPORTATION......VDOT
- 1.02 ESTABLISH AND MAINTAIN REQUIRED LINES AND ELEVATIONS.
- 1.03 APPLY PRIME, TACK AND SEAL COATS ONLY WHEN AMBIENT TEMPERATURE IS ABOVE 50 DEGREES F AND WHEN TEMPERATURE HAS NOT BEEN BELOW 35 DEGREES F FOR 12 HOURS IMMEDIATELY PRIOR TO APPLICATION. CONSTRUCT ASPHALT CONCRETE SURFACE COURSE ONLY WHEN ATMOSPHERIC TEMPERATURE IS ABOVE 40 DEGREES F AND BASE IS DRY. BASE COURSE MAY BE LAID WHEN TEMPERATURE IS ABOVE 30 DEGREES F AND RISING.
- 1.04 THE USE OF AGGREGATE FROM BLUE RIDGE STONE CORPORATION, ROCKYDALE (MT. ATHOS) PLANT, LYNCHBURG, VIRGINIA WILL BE RESTRICTED FROM USE IN ASPHALT SURFACE COURSES WHERE THE MOST CURRENT AVERAGE DAILY TRAFFIC COUNT (ADT) EXCEEDS 19,999 VEHICLES PER DAY. THE USE OF AGGREGATE FROM BLUE RIDGE STONE CORPORATION, LAWYERS ROAD PLANT, LYNCHBURG, VIRGINIA WILL BE RESTRICTED FROM USE IN ASPHALT SURFACE COURSES WHERE THE ADT EXCEEDS 14,999 VEHICLES PER DAY.
- 1.05 CONSTRUCTION AND TESTING SHALL CONFORM TO THESE SPECIFICATIONS AND STANDARD DETAILS. ANY ADDITIONAL CONSTRUCTION AND TESTING NOT COVERED HEREIN SHALL BE PER THE APPLICABLE SECTIONS OF DIVISIONS I, II, III, V, AND VII OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, LATEST REVISION AND THE STANDARD DETAILS SHOWN IN THE VDOT ROAD AND BRIDGE STANDARDS, LATEST REVISION.
- THE CONTRACTOR SHALL HAVE A CERTIFIED ASPHALT CONCRETE PAVING TECHNICIAN PRESENT DURING PAVING OPERATIONS TO ENSURE PROPER PLACEMENT, ALIGNMENT, GRADING AND QUALITY OF PAVING OPERATION. THE FINISHED PAVEMENT SHALL BE UNIFORM AND SMOOTH. A 10-FOOT STRAIGHTEDGE WILL BE USED TO TEST THE SURFACE ALIGNMENT, THE SURFACE SHALL NOT VARY MORE THAN 1/4 INCH FROM THIS STRAIGHT EDGE, BASED ON TWO BEARING POINTS ON EITHER END OF THE STRAIGHT EDGE. HUMPS AND DEPRESSIONS EXCEEDING THE SPECIFIED TOLERANCE SHALL BE CORRECTED, OR THE DEFECTIVE WORK SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL AT CONTRACTOR EXPENSE.

2. PRODUCTS

- 2.01 AGGREGATE BASE COURSE SHALL BE TYPE I, SIZE 21 OR 21A, GRADED AGGREGATE BASE MATERIAL AS DEFINED IN VDOT, ROAD AND BRIDGE SPECIFICATIONS, SECTION 208, "SUBBASE AND AGGREGATE BASE MATERIAL."
- 2.02 MATERIALS FOR USE WITH ASPHALT CONCRETE AS SPECIFIED AS FOLLOWS:
 - A. PRIME COAT SHALL BE CUT-BACK ASPHALT RC-70 OR RC-250, MEETING REQUIREMENTS OF ASTM D 2028 AND AASHTO M81.

- B. TACK COAT SHALL BE EMULSIFIED ASPHALT CRS-1, MEETING REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 210.
- C. SEAL COAT LIQUID ASPHALT SHALL MEET REQUIREMENTS OF VDOT SECTION 210, (CRS-2) VARIABLE BY ONE PERFORMANCE GRADE.
- D. TYPE III, SUBGRADE SEPARATION AND STABILIZATION GEOTEXTILE MEETING REQUIREMENTS OF AASHTO TYPE III, (TYPAR 3401 OR EQUIVALENT) SHALL BE USED AS NOTED ON PROJECT PLANS AND STANDARD DETAILS.
- E. PAVEMENT REINFORCING FABRIC SHALL BE A/OMAT C040 OR EQUAL AND MEET OR EXCEED AASHTO M288-00, PAVING FABRIC REQUIREMENTS AND CONFORM TO AASHTO NATIONAL TRANSPORTATION PRODUCT EVALUATION PROGRAM. THE FABRIC IS NEEDLE PUNCHED, NON-WOVEN AND HEAT TREATED ON ONE SIDE.
- 2.03 SUBMIT JOB MIX FORMULA FOR EACH MIXTURE TO BE SUPPLIED WITHIN 30 DAYS OF CONTRACT AWARD. ASPHALT CONCRETE PAVEMENT SHALL BE AS SPECIFIED BELOW:
 - A. ASPHALT CONCRETE BASE COURSE SHALL BE VDOT BM-25.0 (PG 64-22) MEETING REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 211 (E).
 - B. ASPHALT CONCRETE SURFACE COURSE SHALL BE VDOT SM-9.5A OR SM-12.5D (PG 64-22) MEETING REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 211(E), TYPE AS DETERMINED BASED ON STREET CLASSIFICATION AND AS SHOWN ON STANDARD DETAILS.
- 2.04 MATERIALS FOR USE WITH ASPHALT SURFACE TREATMENT
 - A. SEAL COAT SHALL BE EMULSIFIED ASPHALT CRS-2, MEETING REQUIREMENTS OF VDOT SECTION 210.
 - B. COVER MATERIAL SHALL BE VDOT SIZE 78 OR 8, COARSE AGGREGATE AS DEFINED IN VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 203 COARSE AGGREGATE.
- 2.05 CONCRETE PAVING MATERIALS SHALL MEET REQUIREMENTS OF VDOT SPECIFICATION FOR HYDRAULIC CEMENT CONCRETE PAVEMENT SECTION 217 EXCEPT AS INDICATED ON THE DRAWINGS OR AS MODIFIED BY THE FOLLOWING:
 - A. CONCRETE: 28-DAY STRENGTH 3,000 PSI
 - B. PLAIN AND DEFORMED BARS FOR DOWELS AND REINFORCING STEEL: ASTM A 615, GRADE 60.
 - C. JOINT SEALER SHALL BE SILICONE SEALER IN ACCORDANCE WITH VDOT SECTION 212.02.
 - D. JOINT FILLER SHALL BE EXPANDED RUBBER MEETING REQUIREMENTS OF VDOT SECTION 212.02.
- 2.06 CONCRETE FOR SIDEWALKS AND CURB AND GUTTER SHALL BE CLASS A3 AS SPECIFIED IN SECTION 217 OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
- 2.07 WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 223 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

- 2.08 PAINT FOR PAVEMENT MARKINGS SHALL BE TRAFFIC LANE MARKING PAINT, FACTORY MIXED, QUICK-DRYING, AND NONBLEEDING. PAINT SHALL MEET REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 231 FOR TRAFFIC LINE MARKING PAINT EXCEPT THAT BEADS FOR REFLECTORIZING WILL NOT BE REQUIRED.
- 2.09 GUARDRAIL, POSTS, TERMINALS, AND ACCESSORIES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VDOT ROAD AND BRIDGE STANDARDS.

3. EXECUTION

3.01 NEW PAVEMENT SECTION

- A. SUBGRADE PREPARATION: SUBGRADE PREPARATION SHALL CONSIST OF THE FINAL MACHINING OF THE SUBGRADE IMMEDIATELY PRIOR TO PLACING THE AGGREGATE BASE COURSE. THE SURFACE SHALL BE TRUE TO LINE AND GRADE. CONSTRUCTION METHODS AND EQUIPMENT SHALL CONFORM TO APPLICABLE PORTIONS OF SECTION 305, "SUBGRADE AND SHOULDERS," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
- B. AGGREGATE BASE COURSE CONSTRUCTION METHODS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF SECTION 309, "AGGREGATE BASE COURSE," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
- C. ASPHALT CONCRETE PAVEMENT CONSTRUCTION METHODS SHALL CONFORM TO SECTION 315(E), "ASPHALT CONCRETE PAVEMENT," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
 - (1) APPLY PRIME COAT AT RATE OF 0.20 TO 0.50 GALLON PER SQUARE YARD OVER COMPACTED AGGREGATE BASE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 311(E), "PRIME COAT."
 - (2) APPLY TACK COAT TO CONTACT SURFACES OF PREVIOUSLY CONSTRUCTED ASPHALT OR HYDRAULIC CEMENT CONCRETE AND SURFACES ABUTTING OR PROJECTING INTO ASPHALT CONCRETE PAVEMENT. APPLY AT RATE OF 0.05 TO 0.15 GALLON PER SQUARE YARD OF SURFACE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 310(E), "TACK COAT."

3.02 ASPHALT SURFACE TREATMENT

- A. SUBGRADE PREPARATION: SUBGRADE PREPARATION SHALL CONSIST OF THE FINAL MACHINING OF THE SUBGRADE IMMEDIATELY PRIOR TO PLACING THE AGGREGATE BASE COURSE. THE SURFACE SHALL BE TRUE TO LINE AND GRADE. CONSTRUCTION METHODS AND EQUIPMENT SHALL CONFORM TO APPLICABLE PORTIONS OF SECTION 305 "SUBGRADE AND SHOULDERS," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
- B. AGGREGATE BASE COURSE CONSTRUCTION METHODS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF SECTION 309, "AGGREGATE BASE COURSE," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
- C. ASPHALT SURFACE TREATMENT CONSTRUCTION METHODS SHALL CONFORM TO SECTION 313(E), "ASPHALT SURFACE TREATMENT," OF VDOT ROAD AND BRIDGE SPECIFICATIONS.
 - (1) SURFACE TREATMENT SHALL CONSIST OF THREE SEAL COURSES. FIRST COURSE SHALL CONSIST OF AN APPLICATION OF LIQUID BITUMINOUS MATERIAL CRS-2 AT THE RATE OF 0.3 GALLON PER SQUARE YARD COVERED WITH NO. 8 OR NO. 78 STONE AT THE RATE OF 25 POUNDS PER SQUARE

YARD. THE SECOND COURSE SHALL BE APPLIED AT THE SAME RATES AS THE FIRST COURSE, (I.E. 0.3 GAL/SYD CRS-2 AND 25 LBS/SYD STONE). THE THIRD COURSE SHALL BE CRS-2 APPLIED AT THE RATE OF 0.3 GALLON PER SQUARE YARD COVERED WITH NO. 8 OR NO. 78 STONE AT THE RATE OF 25 POUNDS PER SQUARE YARD.

3.03 RESURFACING

- A. PREPARATION OF SURFACE: PRIOR TO BEGINNING PAVING OPERATIONS, THE EXISTING AREAS TO BE RESURFACED SHALL BE THOROUGHLY CLEANED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. THIS CLEANING SHALL INCLUDE SWEEPING OF THE STREETS WITH A POWER OPERATED BROOM, CUTTING EXCESS DEBRIS WITH A GRADER, WASHING WITH A WATER TRUCK, AND HAND CLEANING ANY DEBRIS LEFT OVER AFTER THIS OPERATION IS COMPLETE. CLEANING OPERATIONS SHALL COMMENCE JUST PRIOR TO THE RESURFACING OF STREETS. IN ADDITION, THE CONTRACTOR SHALL EXPOSE ANY EXISTING PAVING AREAS THAT HAVE BEEN COVERED BY SOIL, GRASS, OR DEBRIS. ALL HORIZONTAL AND VERTICAL SURFACES TO BE IN CONTACT WITH NEW PAVEMENT SHALL BE THOROUGHLY CLEANED AND TACKED BEFORE RESURFACING. ANY EXCESS MATERIAL LEFT OVER AFTER THIS OPERATION SHALL BE REMOVED OR SPREAD OUT TO THE SATISFACTION OF THE ENGINEER. DRY POWER BROOMING WILL NOT BE PERMITTED.
- B. ADJUSTMENT OF MANHOLES, GRATES, VALVE BOXES, ETC.: PRIOR TO RESURFACING OF THE STREETS, ALL NEW AND EXISTING MANHOLES, GRATES, AND VALVE BOXES SHALL BE RAISED TO MATCH THE NEW GRADE OF THE STREET WITHIN A TOLERANCE OF ±0.01 FEET OF FINISHED GRADE. THE CONTRACTOR SHALL CONFIRM NEW PAVEMENT ELEVATIONS WITH THE ENGINEER PRIOR TO ADJUSTMENT. ADJUSTMENT SHALL RESULT IN UNIFORM MATCH TO THE SURROUNDING PAVEMENT ON ALL SIDES OF THE CASTING. ADJUSTMENTS SHALL BE TEMPORARY UNTIL PAVING IS COMPLETE, FINAL GROUTING AND SEALING SHALL BE COMPLETED IMMEDIATELY AFTER PAVING IS COMPLETE, IN ACCORDANCE WITH BID ITEM UNIT PRICE DESCRIPTIONS. CASTINGS SHALL BE STABILIZED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS AT THE DIRECTION OF THE ENGINEER.
- THE CONTRACTOR SHALL CONDUCT ONE DENSITY CHECK PER DAY OR FOR EVERY C. 1000 TONS OF FINAL ASPHALT PLACEMENT IN ACCORDANCE WITH VTM-76 AND VTM-81 AS DIRECTED BY THE ENGINEER. THE AIR VOID RATIO IN WEARING COURSES SHALL NOT EXCEED 7.5 PERCENT AIR VOIDS. WEARING COURSE DENSITY SHALL BE BETWEEN 122 AND 127 LBS/SYD/INCH THICKNESS AND BASE MIX LAYERS SHALL WEIGH BETWEEN 112 AND 117 LBS/SYD/INCH THICKNESS. THE CITY RESERVES THE RIGHT TO APPLY A DEDUCTIVE ADJUSTMENT OF ONE PERCENT FOR EACH PERCENTAGE VARIANCE FROM THESE TARGET VALUES TO THE UNIT PRICE OF THE ASPHALT. FOR VARIANCES TOTALING OVER 25 PERCENT THE CONTRACTOR SHALL REMOVE AND REPLACE THE OUT OF SPECIFICATION MATERIAL AT NO ADDITIONAL COST. IF REQUESTED BY THE CITY ENGINEER, THE CONTRACTOR SHALL CUT SAMPLES FOR TESTING DEPTH AND DENSITY. SAMPLES SHALL BE TAKEN FOR FULL DEPTH AT THE LOCATIONS AS SELECTED BY THE CITY ENGINEER. THE REMOVED PAVEMENT SHALL BE REPLACED WITH NEW MIXTURE AND REFINISHED. NO ADDITIONAL COMPENSATION WILL BE MADE FOR SUCH WORK.
- D. THE USE OF RECYCLED ASPHALT OR AGGREGATE IN ANY ASPHALT CONCRETE SURFACE SHALL BE IN ACCORDANCE WITH SECTION 211, "ASPHALT CONCRETE MATERIALS', OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS, LATEST REVISION. PAVEMENT OVERLAY MATERIAL SHALL BE SM-9.5A OR 12.5D AS PREDICATED BY STREET CLASSIFICATION OR AS DIRECTED BY THE ENGINEER.

STREET CROSS-SECTION PROFILE SHALL MEET MINIMUM SLOPES AS OUTLINED ON STANDARD DETAILS.

- 3.04 CONCRETE WALKS: CONSTRUCT IN ACCORDANCE WITH CITY OF LYNCHBURG SPECIFICATIONS AND STANDARD DETAILS.
- 3.05 CONCRETE CURBS AND COMBINATION CURB AND GUTTER: CONSTRUCT IN ACCORDANCE WITH CITY OF LYNCHBURG SPECIFICATIONS AND STANDARD DETAILS.
- 3.06 THE CONTRACTOR SHALL PROTECT THE PORTLAND CEMENT CONCRETE AND ITS APPURTENANCES AGAINST RAIN, PUBLIC TRAFFIC, AND TRAFFIC CAUSED BY HIS OWN EMPLOYEES AND AGENTS UNTIL IT HAS OBTAINED ITS FINAL SET. THIS SHALL INCLUDE FURNISHING WATCHMEN AND FLAGMEN TO DIRECT TRAFFIC. THE ERECTION AND MAINTENANCE OF WARNING SIGNS, LIGHTS, PAVEMENT BRIDGES OR CROSSOVERS, AND PROPER COVER MATERIAL TO PROTECT AGAINST THE EFFECTS OF RAIN.

3.07 PAVEMENT REPAIRS

- A. PAVEMENT REPAIRS SHALL BE INSTALLED TO MATCH DEPTH OF SURROUNDING PAVEMENT IN ACCORDANCE WITH STANDARD DETAILS.
- B. WHEN PAVEMENT, CURB AND GUTTER, OR SIDEWALKS MUST BE CUT, MAKE THE CUT IN A STRAIGHT LINE, PARALLEL TO, AND 6 INCHES WIDER THAN TRENCH, ON EACH SIDE, TO PROVIDE AN UNDISTURBED SHOULDER UNDER THE NEW WORK.
- C. WHERE TRENCHES CROSS STREETS, DISTURB NO MORE THAN ONE-HALF OF THE STREET WIDTH AT ONE TIME, AND RESTORE THE FIRST TRENCH OPENING TO SATISFACTORY TRAVELABLE CONDITION BEFORE THE SECOND HALF IS EXCAVATED. AVOID PLACEMENT OF EXCAVATED MATERIAL ON EXISTING PAVEMENT WHEREVER POSSIBLE. CLEAN THE PAVEMENT BY AN APPROVED METHOD. USE NO CLEATED EQUIPMENT ON PAVEMENTS. ALTER NORMAL TRAFFIC FLOW ONLY WITH PERMISSION FROM THE OWNER.
- D. REPLACE FINISH SURFACE COURSE DEPTH EQUAL TO THE ORIGINAL PAVEMENT SURFACE COURSE DEPTH. PATCH SURFACE GRADE TOLERANCE WILL BE TESTED USING A TEN FOOT STRAIGHT EDGE, THE SURFACE SHALL NOT VARY BY MORE THAN 0.25 INCHES BETWEEN ANY TWO CONTACT POINTS ON THE STRAIGHT EDGE, ALLOWING FOR EXISTING STREET TOPOGRAPHY AS REQUIRED. ALL VARIANCES OVER THIS AMOUNT WHICH ARE EXHIBITED AFTER THE PATCH HAS BEEN SUBJECT TO NORMAL TRAFFIC FLOW FOR A WEEK SHALL BE CORRECTED AT CONTRACTOR EXPENSE.
- E. RESTORE PRIVATE ENTRANCES TO THE ORIGINAL CONDITIONS OR PROVIDE NO LESS THAN 6 INCHES OF AGGREGATE BASE COURSE, WHICHEVER CONDITION IS BETTER
- F. PAVEMENT REINFORCING FABRIC SHALL BE APPLIED AS DIRECTED BY THE ENGINEER FOR CONTROL OF REFLECTIVE CRACKING ON STREETS TO BE OVERLAID. FABRIC SHALL BE APPLIED IN CONJUNCTION WITH FINAL PAVING IN ACCORDANCE WITH VDOT CRITERIA AND CITY STANDARD SPECIFICATIONS.
- 3.08 TEMPORARY STONE PATCHES SHALL CONSIST OF 8 INCHES OF VDOT NO. 21 OR 21A COMPACTED STONE TOPPED WITH SEAL COAT. THE TEMPORARY PATCH SHALL BE INSTALLED TO THE SAME ELEVATION AS THE SURROUNDING PAVEMENT AND MAY BE USED AS A PERMANENT PATCH IN RESIDENTIAL STREETS TO BE REBUILT. PERMANENT HYBRID PATCHES CONSISTING OF 12 INCHES OF STONE, GEOTEXTILE, AND SURFACE TREATMENT SHALL BE USED IN RESIDENTIAL STREETS WHICH ARE NOT TO BE REBUILT AND THAT WILL RECEIVE PROFILING AND OVERLAY, OR A MINIMUM OF 1.5 INCHES OF OVERLAY AFTER ALL CONSTRUCTION IS COMPLETE, OTHERWISE

- PERMANENT ASPHALT PATCHES SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. TEMPORARY ASPHALT COLD PATCHES OR CONCRETE PATCH SHALL BE USED DURING PERIODS WHEN HOT MIX IS NOT AVAILABLE, THESE TEMPORARY PATCHES SHALL BE REMOVED AND REPLACED WITH PERMANENT PATCH WHEN WEATHER PERMITS.
- 3.09 PAVEMENT REPAIRS OR TEMPORARY PATCHES SHALL BE PROVIDED WITHIN 3 WORKING DAYS OF ALL BACKFILLED TRENCHES.
- 3.10 DO NOT BLOCK PRIVATE ENTRANCES EXCEPT FOR SHORT PERIODS, AND MAINTAIN INGRESS AND EGRESS TO ADJACENT PROPERTY AT ALL TIMES.
- 3.11 DO NOT CLOG STREET DRAINAGE. MAINTAIN SHOULDERS, GUTTERS, AND DITCHES AFFECTED BY TRENCHING OPERATIONS TO CARRY DRAINAGE FLOWS.
- 3.12 PAINT TEMPORARY TRAFFIC AND LANE MARKINGS AS DIRECTED BY OWNER. THE OWNER WILL PAINT THE FINAL TRAFFIC AND LANE MARKINGS ON ALL STREETS.
- 3.13 RESTORE CONCRETE WALKS AND CURB AND GUTTER TO THE ORIGINAL CONDITION.
- 3.14 CONSTRUCT GUARDRAILS AND ACCESSORIES IN ACCORDANCE WITH LATEST EDITION OF VDOT, "ROAD AND BRIDGE STANDARDS", AS DIRECTED BY THE ENGINEER.
- 3.15 UPON COMPLETION OF CONSTRUCTION WORK AND AFTER SPOILS AND DEBRIS HAVE BEEN REMOVED, REGRADE ANY AREAS DISTURBED BY PAVING OPERATIONS.

SECTION 02720 - STORM SEWER SYSTEMS

- 1. GENERAL
- 1.01 SYSTEM DESCRIPTION: WORK IN THIS SECTION INCLUDES ALL STORM DRAINAGE WORK ON THIS PROJECT.
- 1.02 REFERENCE SPECIFICATIONS ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:
 - A. AMERICAN SOCIETY FOR TESTING AND MATERIALS.......ASTM
- 1.03 SUBMITTALS: PROVIDE THE FOLLOWING IN A TIMELY MANNER IN ACCORDANCE WITH THE APPROVED SUBMITTALS SCHEDULE AS SPECIFIED IN SECTION 01000 GENERAL REQUIREMENTS.
 - A. SHOP DRAWINGS OF THE FOLLOWING:
 - (1) MANHOLE RISER SECTIONS AND TOPS
 - (2) MANHOLE FRAMES AND COVERS
 - (3) INLET STRUCTURES AND RELATED APPURTENANCES
 - (5) PIPE AND PIPING SPECIALS
 - B. SUBMITTAL: MANHOLE RISER SECTION AND TOP SHOP DRAWINGS
 - C. SUBMITTAL: MANHOLE FRAME AND COVER SHOP DRAWINGS
 - D. SUBMITTAL: INLETS, ENDWALLS, AND OTHER STORM DRAINAGE ITEMS
- 2. PRODUCTS
- 2.01 REINFORCED CONCRETE PIPE AND FITTINGS SHALL MEET REQUIREMENTS OF ASTM C 76, "REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE," FOR CLASS OF PIPE AS INDICATED ON THE DRAWINGS. PIPE SHALL BE MARKED WITH CLASS AND MANUFACTURER'S NAME.
- 2.02 NON-REINFORCED CONCRETE PIPE AND FITTINGS SHALL MEET REQUIREMENTS OF ASTM C 14, "CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE," CLASS III, B-WALL PIPE. PIPE SHALL BE MARKED WITH CLASS AND MANUFACTURER'S NAME. PLAIN CONCRETE PIPE IS APPROVED FOR STORM USES IN NON-TRAFFIC BEARING SITUATIONS ONLY.
- 2.03 CONCRETE PIPE JOINTS SHALL BE TONGUE AND GROOVE TYPE. PIPE USED FOR EXTENDED DETENTION PONDS SHALL HAVE "O" RING GROOVES AND BE INSTALLED WITH RUBBER GASKETS MEETING ASTM C443.
- 2.04 MANHOLES SHALL BE OF PRECAST CONCRETE MANHOLE RISERS WITH SEALED JOINTS AND MONOLITHIC PRECAST BOTTOMS UNLESS INDICATED OTHERWISE ON DRAWINGS. PRECAST CONCRETE MANHOLE RISERS SHALL BE IN ACCORDANCE WITH ASTM C 478, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS." MINIMUM DIAMETER SHALL BE 48-INCHES, WALL THICKNESS SHALL BE A MINIMUM OF 5-INCHES THICK AND HAVE A 6-INCH MINIMUM EXTENDED BASE. MANHOLE STEPS ARE NOT PERMITTED. MANHOLES OVER 12 FEET DEEP SHALL HAVE 12-INCH EXTENDED BASES WITH APPROPRIATE REINFORCING. THE PIPE OPENING IN PRECAST UNITS SHALL BE AT LEAST 4 BUT NOT MORE THAN 8 INCHES LARGER THAN THE OUTSIDE DIAMETER OF

THE PIPE. PIPE OPENINGS SHALL BE FORMED, DRILLED, OR NEATLY CUT AS APPROVED BY THE ENGINEER.

- A. STANDARD FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE MANUFACTURED FROM CLASS 30 GRAY IRON, MEETING THE REQUIREMENTS OF ASTM A48, STANDARD SPECIFICATION FOR GRAY IRON CASTINGS. STANDARD MANHOLE FRAMES AND COVERS SHALL BE MANUFACTURED TO THE DIMENSIONS AND CONFIGURATIONS SHOWN ON STANDARD DETAILS AND SHALL HAVE A MINIMUM OF 4 1-INCH DIAMETER MOUNTING HOLES IN THE FLANGE OF THE FRAME. MINIMUM INSIDE DIAMETER OF THE OPENING SHALL BE 24 INCHES. MANHOLES CASTINGS MAY BE EITHER BITUMINOUS COATED OR PLAIN. THE BEARING SURFACE OF THE FRAMES AND COVERS SHALL BE MACHINED AND THE COVER SHALL SEAT FIRMLY INTO THE FRAME WITHOUT ROCKING. COVERS ARE TO BE EMBOSSED ALONG THE PERIMETER WITH THE WORDS "STORM." APPROVED CASTINGS ARE THE US FOUNDRY 710 RING AND DP COVER, EAST JORDAN IRON WORKS 2027 FRAME AND COVER, OR APPROVED EQUAL. ALL CASTINGS ARE TO BE MADE IN THE U.S.A. A VULCAN V-1883 FRAME AND COVER IS TO BE USED WITH FLAT TOP MANHOLE STRUCTURES.
- 2.05 INLETS, ENDWALLS, AND OTHER STORM DRAINAGE ITEMS SHALL BE PRECAST REINFORCED CONCRETE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) "ROAD AND BRIDGE STANDARDS."
- DUCTILE IRON PIPE SHALL BE MEET AWWA C151 AND ASTM A746, STANDARD SPECIFICATION FOR DUCTILE IRON GRAVITY SEWER PIPE FOR 4-INCH AND LARGER DIAMETER PIPE, THICKNESS CLASS RATED, CLASS 50 MINIMUM. THE THICKNESS OF DUCTILE IRON PIPE SHALL BE DETERMINED BY CONSIDERING TRENCH LOAD IN ACCORDANCE WITH AWWA C150. THE DUCTILE IRON PIPE SHALL BE CEMENT MORTAR LINED WITH A SEAL COAT IN ACCORDANCE WITH AWWA C104. OUTSIDE COAT SHALL BE A MINIMUM OF 1 MIL BITUMINOUS PAINT ACCORDING TO ANSI/AWWA C151/A21.21 SECTION 51-8.1. DUCTILE IRON PIPE USED FOR STORM SEWERS SHALL BE MARKED WITH WEIGHT, CLASS OR THICKNESS, LETTERS "DI" OR "DUCTILE", MANUFACTURERS MARK, YEAR PIPE WAS MADE AND CASTING PERIOD. PUSH-ON AND MECHANICAL JOINT PIPE SHALL BE AS MANUFACTURED BY THE AMERICAN CAST IRON PIPE COMPANY, UNITED STATES PIPE AND FOUNDRY COMPANY, GRIFFIN PIPE PRODUCTS COMPANY, OR MCWANE CAST IRON PIPE COMPANY.
- 2.07 CONCRETE BLOCK USED FOR CONSTRUCTION OF CATCH BASINS SHALL MEET REQUIREMENTS OF ASTM C139. BRICK USED TO CONSTRUCT STORM APPURTENANCES SHALL MEET ASTM C32 STANDARDS FOR SEWER AND MANHOLE BRICK. MORTAR SHALL BE TYPE M, MEETING ASTM C-270, AND ASTM C-144, MORTAR SHALL BE MIXED IN CLEAN CONTAINERS ON A 1 PART PORTLAND CEMENT TO 2 PARTS SAND RATIO AS IT IS NEEDED AND SHALL NOT BE USED IF IT HAS BEEN MIXED FOR OVER 45 MINUTES. PORTLAND CEMENT SHALL BE TYPE I, CSA NORMAL, MEETING ASTM C150.
- 2.08 ALL CONCRETE FOR CAST-IN-PLACE STRUCTURES SHALL BE A3 CONCRETE, MEETING ASTM C94 STANDARDS FOR READY MIXED CONCRETE UNLESS OTHERWISE DIRECTED.
- 3. EXECUTION
- 3.01 MAINTAIN DRAINAGE ON SITE TO PREVENT EROSION, DAMAGING WATER, AND STANDING WATER DURING ALL PHASES OF CONSTRUCTION.
- 3.02 KEEP EXCAVATIONS CLEAR OF WATER WHILE WORK IS BEING INSTALLED. CONTROL SUBSURFACE WATER ENCOUNTERED AND REPORT TO THE ENGINEER.
- 3.03 BED PIPE AS SPECIFIED IN SECTION 02220 TRENCHING AND BACKFILLING.
- 3.04 LAY PIPE TRUE TO LINE AND GRADE FROM LOW POINT PROGRESSING UPHILL. DO NOT LAY PIPE WHEN TRENCH CONDITIONS OR WEATHER ARE UNSUITABLE FOR SUCH

- WORK. KEEP PIPE INTERIOR CLEAN AND FREE FROM DIRT OR WASTE MATERIALS. INSPECT ALL PIPE FOR DAMAGE, CHECK BELL AND SPIGOT FINISH, ROUNDNESS, AND VOIDS WHICH MAY RESULT IN POOR JOINT PERFORMANCE, ALL DAMAGED, STRUCTURALLY DEFICIENT PIPE, OR PIPE WITH POOR JOINT CONDITIONS SHALL BE REJECTED AND REMOVED FROM SITE.
- 23.05 LAY PIPE UPGRADE WITH BELL OR GROOVE ENDS UPSTREAM. USE MANHOLES FOR ALL CHANGES IN GRADE AND DIRECTION. ALL PIPE SHALL BE CAREFULLY PLACED IN TRENCH, DUMPING AND DROPPING OF PIPE AND STRUCTURES INTO THE EXCAVATION WILL NOT BE PERMITTED. PIPE WITH VARYING WALL CLASS MUST NOT BE MIXED BETWEEN MANHOLES OR BOXES. LEAVE AT LEAST 4 JOINTS EXPOSED FOR INSPECTION PURPOSES DURING THE WORKING DAY, AND PROVIDE SUITABLE SAFE ACCESS FOR INSPECTION DURING CONSTRUCTION. ANY DEFECTS DUE TO SETTLEMENT SHALL BE MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE. PROVIDE A TEMPORARY PLUG TO KEEP OUT DIRT, WATER, AND FOREIGN MATERIALS DURING ALL TIMES WHEN LAYING IS NOT IN ACTUAL PROGRESS.
- 3.06 CONSTRUCT MANHOLE CHANNEL WITH SMOOTH SEMICIRCULAR BOTTOMS MATCHING INSIDE DIAMETERS OF THE CONNECTING SEWERS USING CLASS A3 CONCRETE. CHANGE DIRECTIONS OF FLOW WITH A SMOOTH CURVE OF AS LARGE A RADIUS AS THE MANHOLE SIZE WILL PERMIT. CHANGE SIZE AND GRADE OF CHANNELS GRADUALLY AND EVENLY. CHANNELS MAY BE FORMED DIRECTLY IN THE CONCRETE MANHOLE BOTTOM, MADE OF CHANNEL PIPE, LAID IN CONCRETE OR CONSTRUCTED BY LAYING FULL SECTION SEWER PIPE THROUGH THE MANHOLE AND BREAKING OUT THE TOP HALF WHEN THE SURROUNDING CONCRETE HAS HARDENED. MANHOLE FLOORS OUTSIDE THE CHANNELS SHALL BE SMOOTH AND SHALL HAVE SLOPE BETWEEN 1 AND 2 INCHES PER FOOT TOWARD THE CHANNELS. ALL MANHOLES SHALL BE VERTICALLY PLUMB, GRADE RINGS USED FOR INCREMENTAL ADJUSTMENT OF TOP ELEVATIONS SHALL NOT EXCEED 12-INCHES IN HEIGHT.
- 3.07 CONSTRUCT INLETS, ENDWALLS, AND OTHER STORM DRAINAGE ITEMS AS DETAILED IN THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION "ROAD AND BRIDGE SPECIFICATIONS" OR ON DRAWINGS, AS APPLICABLE.
- PRIOR TO ASSEMBLY SEAL ALL JOINTS IN CONCRETE PIPE, MANHOLE RISERS, AND INLET STRUCTURES USING AMPLE BITUMASTIC JOINT SEALANT MEETING ASTM C990 AND OR GROUT AS DIRECTED BY THE ENGINEER TO THOROUGHLY SEAL JOINT, HOME ALL JOINTS TO MAXIMUM DEPTH OF BELL, ENSURING A LEAK-TIGHT SEAL. ALL JOINTS ARE TO BE THOROUGHLY SEALED SUFFICIENT TO PROHIBIT MIGRATION OF SOIL AND WATER THROUGH JOINTS. THE CONTRACTOR MAY USE BRICK AND MASONRY BLOCK OR CONCRETE PIPE CUTOFFS IN CONJUNCTION WITH MORTAR TO FILL THE VOID BETWEEN PIPE CULVERTS AND PRECAST STRUCTURES. SUCH MATERIALS SHALL BE THOROUGHLY WETTED AND BONDED WITH MORTAR. THE REMAINING EXTERIOR AND INTERIOR VOID SHALL BE FILLED AND FINISHED WITH NON-SHRINK HYDRAULIC CEMENT MORTAR TO THE CONTOUR AND FINISH OF THE PRECAST STRUCTURE. PLUG ALL WEEP HOLES, AND LIFTING RINGS UNLESS SPECIFICALLY DIRECTED OTHERWISE BY THE ENGINEER.
- AS EACH JOINT IS LAID, VISUALLY INSPECT TO BE CERTAIN THAT NO JOINTING COMPOUND, GASKET, TRASH, OR STONE IS PROTRUDING FROM THE JOINT OR LYING INSIDE THE PIPE SO AS TO INTERFERE WITH SEALING THE JOINT. PROTECT STORED PIPE FROM ENTRY OF WATER AND DIRT ENTERING THE PIPE. ALL LINES LAID ON 20 DEGREE SLOPES OR MORE SHALL HAVE CONCRETE ANCHORS PLACED AROUND THE PIPE DIRECTLY BELOW THE BELL END OF THE LINE. THE ANCHORS SHALL BE SPACED EVERY OTHER JOINT UNLESS DIRECTED OTHERWISE BY THE ENGINEER, ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAILS.
- 3.10 COAT MANHOLE CASTINGS WITH A PROTECTIVE COATING OF COAL TAR PITCH VARNISH IF SHOP COATING HAS BEEN DAMAGED. WHEN APPLICABLE, DURING THE

- INSTALLATION OF MANHOLES, IF FRAME AND COVER IS NEAR OR WITHIN WHEEL PATH IN ROADWAY, ROTATE CONE TO PLACE THE FRAME OUT OF NORMAL WHEEL PATH.
- 3.11 ALL DROP INLET TOPS SHALL BE SET ON FLAT TOP MANHOLE ASSEMBLIES TO ENSURE WATERTIGHT SEAL AND PROVISION OF ADEQUATE BEARING SURFACE TO SECURELY ATTACH DROP INLET TOP TO RISER SECTION. PROVISION OF FLAT TOP MANHOLE ASSEMBLIES SHALL BE INCLUDED IN PRICE FOR DROP INLETS AND WILL NOT BE PAID FOR SEPARATELY.
- 3.12 ALL MANHOLE FRAMES SHALL BE SECURED TO ADJUSTING RING OR RISER SECTION/FLAT TOP ASSEMBLIES WITH BUTYL MASTIC, ANCHOR BOLTS OR OTHER MEANS TO PROVIDE AN IMPACT RESISTANT WATERPROOF SEAL.
- 3.13 ALL LINES AND MANHOLES SHALL BE VISUALLY INSPECTED BY USE OF MIRRORS OR TELEVISION CAMERAS. ALL STRUCTURES AND PIPES SHALL EXHIBIT ZERO INFILTRATION BASED ON VISIBLE INSPECTION. STORM LINES SHALL EXHIBIT A FULLY CIRCULAR PATTERN WHEN VIEWED FROM ONE MANHOLE TO THE NEXT. LINES, WHICH DO NOT EXHIBIT A TRUE AND CORRECT LINE AND GRADE, ARE OBSTRUCTED OR HAVE STRUCTURAL DEFECTS, SHALL BE CORRECTED TO MEET THESE SPECIFICATIONS AND THE BARREL LEFT CLEAN FOR ITS ENTIRE LENGTH. ACCEPTANCE TESTING MAY INCLUDE CCTV INSPECTION AT THE DIRECTION OF THE ENGINEER. CITY CREWS WILL CONDUCT CCTV SURVEYS AS REQUIRED FOR FINAL INSPECTION.
- 3.14 WHENEVER FIELD CUTTING OF CONCRETE IS REQUIRED, THE WORK SHALL BE DONE IN A SATISFACTORY MANNER WITH AN APPROVED CUTTING TOOL OR TOOLS WHICH WILL LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE STRUCTURE AND NOT OTHERWISE DAMAGE THE PIPE OR STRUCTURE. THE METHOD OF CUTTING PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SUCH CUTS SHALL BE MADE BY THE CONTRACTOR WITHOUT EXTRA COMPENSATION
- 3.15 WHEN AN EXISTING MANHOLE OR DROP INLET IS DESIGNATED TO BE ABANDONED AND THE STORM LINES, EITHER ENTERING OR EXITING THE MANHOLE HAVE BEEN FILLED WITH FLOWABLE FILL, THE UPPER PORTION OF THE MANHOLE SHALL BE REMOVED TO A MINIMUM OF TWO FEET BELOW THE PROPOSED FINISHED GRADE, A HOLE PUNCHED IN THE BOTTOM OF THE STRUCTURE, AND THE STRUCTURE BACKFILLED WITH VDOT #57 STONE COMPACTED IN 6-INCH LIFTS. THE REMAINING PORTION SHALL BE BACKFILLED WITH STONE OR ASPHALT TO MATCH ROADWAY CROSS-SECTION. IN OFF ROAD AREAS, AASHTO TYPE III GEOTEXTILE WILL BE LAID ON THE STONE BASE AND SUITABLE SOIL MATERIAL COMPACTED ON TOP TO MATCH SURROUNDING GRADE.
- 3.16 DRAINAGE DITCHES, GRASS SWALES AND CHANNEL IMPROVEMENTS SHALL BE GRADE AND SHAPED ACCORDING TO ELEVATIONS, SLOPES, WIDTHS, CROSS-SECTIONS AND LENGTHS INDICATED ON PLANS, TAKING CARE TO TIE INTO NATURAL GRADES OF ALL EXISTING OR NATURAL CHANNELS. EXPOSED EARTH AND FILL MATERIALS IN DRAINAGE CHANNELS SHALL BE COMPACTED, SEEDED AND ARMORED AS DIRECTED TO PROTECT NEWLY GRADED AREAS FROM EROSION.
- 3.17 WHEN AN EXISTING STORM LINE IS DESIGNATED TO BE ABANDONED IN PLACE, THE LOW END OF THE LINE IS TO BE PLUGGED AND LEAN CONCRETE GROUT (FLOWABLE FILL) PUMPED INTO THE LINE UNTIL LINE IS COMPLETELY FILLED.

SECTION 02730 - SANITARY SEWER SYSTEM

⊥.	GENERAL

- 1.01 DESCRIPTION: THIS SECTION SPECIFIES ALL SANITARY SEWER WORK ON THIS PROJECT.
- 1.02 REFERENCE SPECIFICATIONS ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:
 - A. AMERICAN NATIONAL STANDARDS INSTITUTE.....ANSI

- B. AMERICAN SOCIETY FOR TESTING AND MATERIALS......ASTM
- C. AMERICAN WATER WORKS ASSOCIATION......AWWA
- D. AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION......AREMA.
- E. NATIONAL BUREAU OF STANDARDS.....NBS

1.03 PROJECT CONDITIONS

A. SANITARY SEWER SYSTEM IMPROVEMENTS AND CONSTRUCTION OPERATIONS SHALL FOLLOW VIRGINIA DEPARTMENT OF HEALTH AND VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS, INCLUDING REQUIREMENTS FOR SEPARATION OF WATER MAINS AND SANITARY AND COMBINED SEWER LINES. ALL TIE IN CONNECTIONS SHALL BE COORDINATED WITH THE UTILITIES DIVISION.

B. PARALLEL INSTALLATION

- (1) NORMAL CONDITIONS SEWER LINES AND MANHOLES SHALL BE CONSTRUCTED AT LEAST 10 FEET HORIZONTALLY FROM A WATER LINE WHENEVER POSSIBLE. THE DISTANCE SHALL BE MEASURED EDGE-TO-EDGE.
- (2) UNUSUAL CONDITIONS WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF AT LEAST 10 FEET, THEN MAXIMUM HORIZONTAL SEPARATION SHALL BE PROVIDED WITH VERTICAL SEPARATION OF BOTTOM OF WATER LINE AT LEAST 18 INCHES ABOVE TOP OF SEWER. WHERE THIS VERTICAL SEPARATION CANNOT BE OBTAINED, THE SEWER SHALL BE CONSTRUCTED OF AWWA APPROVED DUCTILE IRON WATER PIPE PRESSURE-TESTED IN PLACE TO 50 PSI WITHOUT LEAKAGE PRIOR TO BACKFILLING. SEWER MANHOLES WITHIN TEN FEET OF A WATERLINE SHALL BE OF WATERTIGHT CONSTRUCTION, INCLUDING THE FRAME AND COVER AND LEAK TESTED IN PLACE.

C. CROSSING 1

- (1) NORMAL CONDITIONS SEWERS CROSSING UNDER WATER LINES SHALL BE LAID TO PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER WHENEVER POSSIBLE.
- (2) UNUSUAL CONDITIONS WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION DESCRIBED IN "CROSSING, NORMAL CONDITIONS," PARAGRAPH ABOVE, THE FOLLOWING CONSTRUCTION SHALL BE USED.

- a. SEWERS PASSING OVER OR UNDER WATER LINES SHALL BE CONSTRUCTED OF CAST OR DUCTILE IRON PIPE WITH MECHANICAL JOINTS AS DESCRIBED IN "PARALLEL INSTALLATION, UNUSUAL CONDITIONS" ABOVE.
- b. SEWERS PASSING OVER WATER LINES SHALL BE LAID TO PROVIDE:
 - (1) VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN BOTTOM OF SEWER AND TOP OF WATER LINE,
 - (2) ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF THE JOINTS AND SETTLING ON AND BREAKING WATER LINE,
 - (3) MAXIMUM SEPARATION OF WATER AND SEWER LINE JOINTS.
 - (4) SANITARY AND/OR COMBINED SEWERS OR SEWER MANHOLES NO WATER MAINS/PIPES SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE. WATER MAINS SHALL BE PLACED AT LEAST 10 FEET AWAY FROM ANY PART OF A MANHOLE.
 - (5) NO SEWER SHALL PASS WITHIN 50 FEET OF A DRINKING WATER SUPPLY WELL, SOURCE OR STRUCTURE UNLESS SPECIAL CONSTRUCTION AND PIPE MATERIALS ARE USED TO OBTAIN ADEQUATE PROTECTION.
- 1.04 SUBMITTALS: PROVIDE THE FOLLOWING IN A TIMELY MANNER IN ACCORDANCE WITH THE APPROVED SUBMITTALS SCHEDULE AS SPECIFIED IN SECTION 01000 GENERAL REQUIREMENTS.
 - A. SHOP DRAWINGS OF THE FOLLOWING:
 - (1) PIPE AND PIPING SPECIALS
 - (2) PRECAST CONCRETE MANHOLE CASTING SECTIONS
 - (3) MANHOLE FRAMES AND COVERS
 - (4) DETAILS FOR ALL PIPE AND MANHOLE CONNECTIONS
 - (5) MILL FABRICATED STEEL SEWER PIPE, INCLUDING COMPLIANCE AFFIDAVIT
 - (6) SHOP DRAWINGS AND LAY SCHEDULE FOR ALL TUNNELING, INCLUDING LINER PLATES AND RIBS.
 - (7) 50 YEAR DESIGN LIFE MANUFACTURER'S WARRANTY FOR ALL SEWER PIPE
 - (8) A LAY SCHEDULE FOR ALL PIPE OVER 24-INCHES
 - B. SUBMITTAL: REINFORCED CONCRETE PIPE DETAILS
 - C. SUBMITTAL: DUCTILE IRON PIPE DETAILS
 - D. SUBMITTAL: PIPE FITTINGS DETAILS
 - E. SUBMITTAL: MECHANICAL JOINTS AND JOINTING MATERIALS DETAILS
 - F. SUBMITTAL: PUSH-ON JOINT AND RUBBER GASKET DETAILS
 - G. SUBMITTAL: CEMENT MORTAR LINING DETAILS
 - H. SUBMITTAL: EXTERIOR, BITUMINOUS COATING DETAILS

- I. SUBMITTAL: POLYVINYL CHLORIDE PLASTIC GRAVITY SEWER PIPE DETAILS
- J. SUBMITTAL: FLEXIBLE COUPLING DETAILS
- K. SUBMITTAL: PRECAST MANHOLE DETAILS
- L. SUBMITTAL: PIPE TO MANHOLE CONNECTION DETAILS
- M. SUBMITTAL: MANHOLE FRAME AND COVER DETAILS
- N. SUBMITTAL: WATERPROOF MANHOLE FRAME AND COVER DETAILS
- O. SUBMITTAL: STEEL PIPE DETAILS
- P. SUBMITTAL: TUNNEL LINERS AND APPURTENANCES

2. PRODUCTS

- 2.01 REINFORCED CONCRETE PIPE BELOW 42-INCHES IN DIAMETER SHALL BE A MINIMUM OF CLASS III, B-WALL, GASKETED JOINT PIPE MEETING REQUIREMENTS OF ASTM C 76 FOR THE CLASS UNLESS SHOWN OTHERWISE ON THE DRAWINGS. PIPE ABOVE 42-INCHES IN DIAMETER SHALL BE A MINIMUM OF CLASS III, C-WALL PIPE END SHALL HAVE O-RING GASKET GROOVE PROVIDED DURING MANUFACTURING PROCESS.
 - A. PROTECTIVE COATING FOR CONCRETE PIPE INTERIOR SHALL BE TWO COATS OF COAL TAR SOLUTION SUCH AS INTERNATIONAL PROTECTIVE COATINGS, "INTERTUF 100," PITTSBURG PAINT, "COAL CAT" 97-640/97-641, OR MADE WITH CALCAREOUS AGGREGATE WITH AZ FACTOR OF 90.
 - B. RUBBER GASKETS AND JOINTS OF CONCRETE PIPE SHALL MEET REQUIREMENTS OF ASTM C 443. GASKETS SHALL BE THE O-RING TYPE.
 - C. PIPE AND JOINTS SHALL BE TESTED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ASTM C 76, ASTM C 443, ASTM C 14, AND ASTM C 497.
 - (1) PROVIDE THREE-EDGE BEARING METHOD FOR EXTERNAL LOAD CRUSHING STRENGTH, ABSORPTION, PERMEABILITY, AND CORE STRENGTH TESTS ON EVERY FIFTIETH SECTION OF EACH SIZE OF PIPE.
 - (2) EACH SECTION OF EACH PIPE SHALL BE HYDROSTATICALLY TESTED OR VACUUM TESTED.
 - D. CEMENT USED IN THE MANUFACTURING OF CONCRETE PIPE SHALL BE ASTM C 150 TYPE II.
- 2.02 DUCTILE IRON PIPE SHALL MEET REQUIREMENTS OF ANSI/AWWA C151 FOR THE MINIMUM PRESSURE CLASS OF 150, (THICKNESS CLASS 50 MINIMUM). THICKNESS CLASSES SHALL MEET REQUIREMENTS OF ANSI/AWWA C150 ACCORDING TO DEPTH OF BURIAL. MINIMUM LAY LENGTH SHALL BE 18 FEET EXCEPT WHERE FIELD CUT TO TIE INTO STRUCTURES.
- 2.03 GRAY IRON OR DUCTILE IRON FITTINGS SHALL MEET REQUIREMENTS OF ANSI/AWWA C110 FOR COMPACT FITTINGS, WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI, (MINIMUM THICKNESS CLASS 54). FITTINGS SHALL BE HYDROSTATICALLY TESTED BY THE MANUFACTURER AND RESULTS PROVIDED AS DIRECTED BY THE ENGINEER.
- 2.04 MECHANICAL JOINTS AND JOINTING MATERIALS SHALL MEET REQUIREMENTS OF ANSI/AWWA C111. ONLY HIGH STRENGTH LOW ALLOY STEEL COR-TEN BOLTS SHALL BE USED.

- A. MECHANICAL JOINT RETAINER GLANDS SHALL BE "MEGALUG" MANUFACTURED BY EBAA IRON, INCORPORATED, SERIES 1400 "BLOCK BUSTER" WEDGE ACTION RETAINER GLAND MANUFACTURED BY UNI-FLANGE, OR "ROMA-GRIP" AS MANUFACTURED BY ROMAC INDUSTRIES.
- B. METAL HARNESS SHALL BE GALVANIZED RODS AND CLAMPS AS DETAILED ON DRAWINGS.
- C. THE MECHANICAL JOINT SHALL CONSIST OF: A BELL CAST INTEGRALLY WITH THE PIPE OR FITTING AND PROVIDED WITH AN EXTERIOR FLANGE HAVING CORED OR DRILLED BOLT HOLES AND INTERIOR ANNULAR RECESSES FOR THE SEALING GASKET AND THE SPIGOT OF THE PIPE OR FITTING; A PIPE OR FITTING SPIGOT; A SEALING GASKET AND A SEPARATE DUCTILE IRON FOLLOWER GLAND HAVING CORED OR DRILLED BOLT HOLES WITH DUCTILE IRON TEE HEAD BOLTS AND HEXAGON NUTS. THE JOINT SHALL BE DESIGNED TO PERMIT NORMAL EXPANSION, CONTRACTION, AND DEFLECTION OF THE PIPE OR FITTING WHILE MAINTAINING A LEAK PROOF JOINT CONNECTION. THE MECHANICAL JOINT SHALL CONFORM TO THE REQUIREMENTS OF FEDERAL SPECIFICATION WW-P-421, AWWA C111 AND ASTM A536 SPECIFICATION FOR DUCTILE IRON CASTINGS.
- 2.05 PUSH-ON JOINT DUCTILE IRON PIPE SHALL CONFORM TO AWWA C151/ANSI A21.51 (SUCH AS "FASTITE," "TYTON," OR "BELL-TITE."). THE GASKET SHALL BE OF SUCH SIZE AND SHAPE TO PROVIDE AN ADEQUATE COMPRESSIVE FORCE AGAINST THE PLAIN END AND SOCKET AFTER ASSEMBLY TO AFFECT A POSITIVE SEAL. GASKETS SHALL BE VULCANIZED NATURAL OR VULCANIZED SYNTHETIC RUBBER, AND COMPLY WITH AWWA C111/ANSI A21.11.
- 2.06 DUCTILE IRON PIPES 24-INCH DIAMETER AND SMALLER SHALL BE FACTORY LINED WITH HIGH ALUMINA CEMENT MORTAR, DUCTILE IRON PIPE ABOVE 24-INCHES SHALL BE LINED WITH REGULAR CEMENT MORTAR MEETING THE THICKNESSES SPECIFIED BELOW. DUCTILE IRON PIPE WITH FACTORY APPLIED 40 MIL THICK CERAMIC EPOXY LINING, PROTECTO 401 OR EQUIVALENT IS ALSO ACCEPTABLE. CEMENT MORTAR SHALL MEET REQUIREMENTS OF ANSI/AWWA C104. LINING THICKNESS SHALL BE A MINIMUM OF 0.125 INCH FOR 4 TO 12-INCH DIAMETER PIPES, AND 0.187 INCH THICK FOR 14 TO 24-INCH PIPES.
 - A. A FACTORY STANDARD BITUMINOUS SEAL COAT SHALL BE APPLIED OVER THE HIGH ALUMINA CEMENT LINING. THE ENTIRE INSIDE OF THE SOCKET, INCLUDING THE GASKET CAVITY, SHALL BE COATED WITH A MINIMUM OF 8 MILS OF EPOXY TO PREVENT CORROSION IN THE JOINT. SEAL COAT FOR REGULAR CEMENT MORTAR LINED PIPE SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C104. ALL BELLS AND JOINTS SHALL HAVE FACTORY APPLIED JOINT COMPOUND MEETING THE ANTI-CORROSION PROPERTIES OF THE PIPE LINING MATERIAL.
 - B. THE CONTRACTOR SHALL PERFORM ANY FIELD REPAIRS REQUIRED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO PRESERVE THE INTEGRITY OF FACTORY APPLIED LININGS.
- 2.07 EXTERIOR, BITUMINOUS COATING FOR GRAY IRON FITTINGS AND DUCTILE IRON PIPE AND FITTINGS SHALL MEET REQUIREMENTS OF ANSI/AWWA C151.
- 2.08 POLYVINYL CHLORIDE (PVC) PLASTIC GRAVITY SEWER PIPE SHALL MEET REQUIREMENTS OF ASTM D 3034 AND BE INTEGRAL BELL, GASKETED JOINT PIPE WITH DIMENSION RATIO (DR) OF 26 AND MINIMUM PIPE STIFFNESS (PS) OF 115 PSI, MEET ASTM D 2241 WITH DR OF 26, OR MEET ASTM D 1785, SCHEDULE 40. LARGER DIAMETER SDR 26 PVC PIPE FROM 18 TO 27 INCH DIAMETER SHALL COMPLY WITH REQUIREMENTS OF ASTM F679. MINIMUM LAY LENGTHS SHALL BE 12.5 FEET

FOR PIPES 15-INCHES IN DIAMETER AND LESS, AND 11 FEET FOR PIPES ABOVE 15-INCHES IN DIAMETER.

- A. PIPE JOINT SHALL MEET REQUIREMENTS OF ASTM D 3212 OR D 3139 AS APPLICABLE.
- B. RUBBER GASKETS SHALL MEET PHYSICAL REQUIREMENTS SPECIFIED IN ASTM F 477 IN ALL RESPECTS.
- C. POLYVINYL CHLORIDE (PVC) SEWER LATERAL PIPE: FITTINGS AND SPECIALS SHALL BE SCHEDULE 40 MEETING REQUIREMENTS OF ASTM D 1785 WITH INTEGRAL RUBBER RING WALL BELL AND SPIGOT, SOLVENT WELD, OR MECHANICAL JOINTS SUITABLE FOR THE CONVEYANCE OF RAW DOMESTIC SEWAGE. PIPE SHALL BE FURNISHED IN STANDARD NOMINAL LENGTHS.
- 2.09 FLEXIBLE COUPLINGS SHALL BE MANUFACTURED BY FERNCO OR APPROVED EQUAL. THE CONNECTOR SHALL BE OF A SIZE SPECIFICALLY DESIGNED FOR THE PIPE MATERIAL AND SIZE BEING INSTALLED.
- 2.10 MANHOLES SHALL BE PRECAST REINFORCED CONCRETE MANHOLE SECTIONS MEETING REQUIREMENTS OF ASTM C 478 AND BE IN ACCORDANCE WITH STANDARD DETAILS. SECTION ENDS SHALL HAVE O-RING GASKET GROOVE PROVIDED DURING MANUFACTURING PROCESS.
 - A. JOINTS FOR PRECAST CONCRETE MANHOLE RISER SECTIONS SHALL BE SEALED WITH FLEXIBLE BUTYL RESIN SEALANT AS MANUFACTURED BY CONCRETE SEALANTS, INC. OR APPROVED EQUAL. SEALANT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - B. PROTECTIVE COATING FOR CONCRETE MANHOLE SECTION INTERIOR SHALL BE TWO COATS OF COAL TAR EPOXY EQUAL TO PORTER PAINTS "PORTERTUF 2000" OR MANUFACTURED WITH CALCAREOUS AGGREGATE SO THAT THE FINISHED PRODUCT WILL HAVE AN AZ FACTOR EQUAL TO 90.
 - C. PIPE TO MANHOLE CONNECTION SHALL BE SEALED WITH A FLEXIBLE BOOT, GASKET, OR SEAL AND MEET REQUIREMENTS OF ASTM C 923.
 - (1) WHEN THE BOOT IS USED, THE PORT SHALL BE CORED TO THE SIZE, SHAPE, SURFACE FINISH, AND LOCATION REQUIRED AND NOT CAST IN THE MANHOLE. ANGULAR ADJUSTMENTS THROUGH 20 DEGREES SHALL BE ALLOWED. THE FLEXIBLE BOOT SHALL BE A 3/8-INCH THICK NEOPRENE COMPOUND MEETING ASTM C 443 SPECIFICATIONS. THE BOOT SHALL BE SECURED TO THE PORT WITH AN INTERNAL ALUMINUM EXPANDING BAND AND TO THE PIPE WITH A NONMAGNETIC CORROSION RESISTANT STEEL EXTERNAL BAND. BOOT SEAL SHALL BE "KOR-N-SEAL" AS MANUFACTURED BY NATIONAL POLLUTION CONTROL SYSTEMS, INC.
 - (2) WHEN GASKET IS USED, THE GASKET SHALL BE A RUBBER PRESSED WEDGE GASKET CAST INTO THE MANHOLE WITH A MAXIMUM DEFLECTION OF 15 DEGREES AS MANUFACTURED BY PRESS-SEAL GASKET CORPORATION.
 - (3) THE CONNECTOR SHALL BE OF A SIZE SPECIFICALLY DESIGNED FOR THE PIPE MATERIAL AND SIZE BEING INSTALLED.
 - D. MANHOLE FRAMES AND COVERS SHALL BE MANUFACTURED FROM CLASS 30 GRAY IRON, MEETING THE REQUIREMENTS OF ASTM A48, MANUFACTURED TO THE DIMENSIONS AND CONFIGURATIONS SHOWN ON STANDARD DETAILS AND SHALL HAVE 4 OR 6 1-INCH DIAMETER HOLES IN THE FLANGE OF THE FRAME, AS APPLICABLE. MINIMUM INSIDE DIAMETER OF THE OPENING SHALL BE 24 INCHES. MANHOLES CASTINGS MAY BE EITHER BITUMINOUS COATED OR PLAIN.

THE BEARING SURFACE OF THE FRAMES AND COVERS SHALL BE MACHINED AND THE COVER SHALL SEAT FIRMLY INTO THE FRAME WITHOUT ROCKING. COVERS ARE TO BE EMBOSSED ALONG THE PERIMETER WITH THE WORDS "SANITARY SEWER." APPROVED CASTINGS ARE THE US FOUNDRY 710 RING AND DP COVER, EAST JORDAN IRON WORKS 2027 FRAME AND COVER, OR APPROVED EQUAL. ALL CASTINGS ARE TO BE MADE IN THE U.S.A. A VULCAN V-1883 IS TO BE USED WITH FLAT TOP MANHOLES UNLESS THE TOP OF THE MANHOLE IS LESS THAN 1-FOOT ABOVE THE 100-YEAR BASE FLOOD ELEVATION. IN THAT CASE, A WATERPROOF FRAME AND COVER SHALL BE USED.

- E. LAMPSTACK FRAMES AND COVERS SHALL BE MANUFACTURED FROM CLASS 30 GRAY IRON, MEETING THE REQUIREMENTS OF ASTM A48, STANDARD SPECIFICATION FOR GRAY IRON CASTINGS. LAMPSTACK FRAMES AND COVERS MAY BE EITHER BITUMINOUS COATED OR PLAIN. LAMPSTACK FRAME AND COVER SHALL CONFORM TO THE DIMENSIONS AND CONFIGURATION OF STANDARD DETAILS.
- F. WATERPROOF BOLT-DOWN FRAMES AND COVERS SHALL HAVE 4 STAINLESS STEEL BOLTS AT 90 DEGREES AND ONE POLYVINYL GASKET BETWEEN COVER AND FRAME SEAT. DIMENSIONS AND CONFIGURATIONS SHOWN ON STANDARD DETAILS AND FRAME IS TO HAVE A MINIMUM OF FOUR 1-INCH DIAMETER HOLES IN FLANGE OF THE FRAME. WATERPROOF FRAMES AND COVERS ARE TO BE UTILIZED WHENEVER MANHOLE TOP IS SET LOWER THAN 1-FOOT ABOVE THE 100-YEAR BASE FLOOD ELEVATION. COVERS ARE TO BE EMBOSSED ALONG THE PERIMETER WITH THE WORDS "SANITARY SEWER." APPROVED MODELS ARE TO BE US FOUNDRY 710 RING AND DP-SSG COVER, EAST JORDAN IRON WORKS 2027 FRAME AND COVER WITH WIPER GASKET OR APPROVED EQUAL. ALL CASTINGS ARE TO BE MADE IN THE U.S.A.
- G. FRAME TO MANHOLE BOLTS SHALL BE STAINLESS STEEL EXPANSION BOLTS MANUFACTURED BY HILTI, RAWL OR LIEBIG. THE FRAME SHALL ALSO BE SEALED AND ANCHORED TO THE TOP OF THE MANHOLE RISER SECTIONS WITH FLEXIBLE BUTYL RESIN SEALANT IN 1-INCH ROPE FORM.
- 2.11 DETECTABLE TAPE SHALL HAVE A METALLIC CORE PROTECTED BY A PLASTIC JACKET. THE TAPE SHALL BE CONTINUOUSLY MARKED INDICATING THAT A SEWER LINE IS BURIED BENEATH THE TAPE.
- 2.12 FLEXIBLE, WATERTIGHT CONNECTORS FOR CONNECTING SERVICE LATERALS TO NEW CONCRETE PIPE SHALL BE "KOR-N-TEE" CONNECTOR MANUFACTURED BY NPC, INC., OF MILFORD, NEW HAMPSHIRE, OR APPROVED EQUAL.
- 2.13 CLEANOUT ASSEMBLY AND VERTICAL PIPE FOR CLEANOUTS SHALL BE AS INDICATED IN STANDARD DETAIL FOR SEWER CONNECTIONS. SERVICE SADDLES SHALL CONFORM TO ASTM D3034.
- 2.14 STEEL PIPE FOR GRAVITY SEWER MAINS, AERIAL CROSSINGS, AND VENT PIPES SHALL MEET THE REQUIREMENTS OF AWWA C200, AWWA STANDARD FOR MILL TYPE STEEL WATER PIPE. NOMINAL PIPE DIAMETER AND WALL THICKNESS SHALL BE AS INDICATED ON THE DRAWINGS. PIPE SHALL BE HIGH STRENGTH STEEL, SPIRAL WELDED OR SMOOTH-WALL SEAMLESS MANUFACTURED IN ACCORDANCE WITH ASTM A139, STANDARD SPECIFICATION FOR ELECTRIC-FUSION (ARC)-WELDED STEEL PIPE (NPS 4 AND OVER) AND ASTM A283, STANDARD SPECIFICATION FOR LOW AND INTERMEDIATE TENSILE STRENGTH CARBON STEEL PLATES, GRADE "B" STEEL WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI.
 - A. STEEL PIPE FOR GRAVITY SEWER MAINS SHALL BE SEAMLESS AND EITHER FURNACE-WELDED OR ELECTRICALLY WELDED PIPE, GRADE B. THE INTERIOR AND EXTERIOR COATING SHALL BE COAL-TAR ENAMEL IN ACCORDANCE WITH AWWA C203.

- B. STEEL PIPE FOR AERIAL CREEK CROSSINGS (WITHOUT ENCASEMENT AND CARRIER PIPE): THE OUTSIDE OF THE PIPE SHALL HAVE ONE COAT OF ZINC CHROMATE PRIMER CONFORMING TO FEDERAL SPECIFICATION TT-86-A AND AFTERWARDS PAINTED WITH COAL TAR ENAMEL. THE INTERIOR LINING SHALL BE A COAL-TAR ENAMEL COATING AS SPECIFIED UNDER AWWA C203.
- C. STEEL ENCASEMENT PIPE FOR BORING APPLICATIONS: ENCASEMENT PIPE SHALL MEET APPLICABLE VDOT AND AREA SPECIFICATIONS. CASING PIPE SHALL INCLUDE PIPE CARRIERS (SPIDERS) TO SUPPORT CARRIER PIPE.
- D. THE SPIDERS NECESSARY TO SUPPORT THE CARRIER PIPE INSIDE OF THE STEEL ENCASEMENT PIPE SHALL CONFORM TO BOTH THE SHAPE AND DIMENSIONS OF STANDARD DETAIL, INCLUDING REQUIREMENTS FOR SPIDER SPACING. SPIDERS SHALL BE OF HEAVY-DUTY GALVANIZED STEEL.
- E. STEEL VENT PIPES FOR MANHOLES: THE VENT PIPE SHALL BE MADE FROM 4-INCH SCHEDULE 40. THE PIPE SHALL BE COATED INSIDE AND OUT IN ACCORDANCE WITH AWWA C203 AND CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAILS.
- 2.15 LINER PLATES SHALL BE ONE-PIECE STEEL MEETING THE REQUIREMENTS OF ASTM A 569, ASTM A 570, OR ASTM A 611. PLATES SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF AT LEAST 42,000 PSI AND YIELD STRENGTH OF 28,000 PSI. GAGE THICKNESS SHALL BE A MINIMUM OF 8 GAGE. THE LINER PLATE AND BOLTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. THE LINER PLATES SHALL BE ASPHALT COATED TO MEET AREA 1-14-13. FOR TWO FLANGE PLATES, THE MINIMUM THICKNESS SHALL BE 0.135 INCHES. PLATES SHALL BE MANUFACTURED BY ARMCO STEEL CORPORATION, COMMERCIAL SHEARING, INCORPORATED, REPUBLIC STEEL CORPORATION, OR APPROVED EQUAL. GROUT HOLES 11/2 INCHES OR 2 INCHES (OR LARGER) IN DIAMETER SHALL BE PROVIDED IN EACH RING TO PERMIT GROUTING AS THE ERECTION OF THE TUNNEL LINER PLATES PROGRESSES. GROUT HOLE SCREW PLUGS SHALL BE PROVIDED IN PLATES. STEEL BOLTS SHALL MEET REQUIREMENTS OF ASTM A449 FOR PLATE THICKNESS EQUAL TO OR GREATER THAN 0.209 INCH AND ASTM A 307 FOR PLATE THICKNESS LESS THAN 0.209 INCH. THE NUT SHALL MEET REQUIREMENTS OF ASTM A 307, GRADE A.
 - A. GROUT MIX FOR FILLING VOIDS IN BETWEEN CARRIER PIPE AND TUNNEL SHALL CONSIST OF THE FOLLOWING MATERIALS PROPERLY MIXED IN PROPORTIONS BY WEIGHT.
 - 1) 1.0 PART CEMENT,
 - 2) 3.0 PARTS FINE SAND, 100 PERCENT SHALL PASS NO. 16 SIEVE, AND
 - 3) 0.5 TO 0.6 PART WATER.
 - B. CARRIER PIPE FOR CASINGS AND TUNNELS SHALL BE MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE, MINIMUM THICKNESS CLASS 50 UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.

3. EXECUTION

3.01 TAKE ALL PRECAUTIONS NECESSARY TO INSURE THAT PIPE, FITTINGS, AND RELATED ITEMS ARE NOT DAMAGED IN UNLOADING, HANDLING, AND PLACING IN TRENCH. EXAMINE EACH PIECE OF MATERIAL JUST PRIOR TO INSTALLATION TO DETERMINE THAT NO DAMAGE HAS OCCURRED. REMOVE ANY DAMAGED MATERIAL FROM THE SITE AND REPLACE WITH UNDAMAGED MATERIAL.

- A. KEEP PIPE CLEAN. EXERCISE CARE TO KEEP FOREIGN MATERIAL AND DIRT FROM ENTERING PIPE DURING STORAGE, HANDLING, AND PLACING IN TRENCH. CLOSE ENDS OF IN-PLACE PIPE AT THE END OF ANY WORK PERIOD TO PREVENT ENTRY OF ANIMALS AND FOREIGN MATERIAL.
- B. BED PIPE AS SPECIFIED IN SECTION 02220 TRENCHING AND BACKFILLING. IN AREAS OF ROCK OUTCROPPINGS OR LARGE ROCK COBBLES, PROVIDE A MINIMUM OF 6-INCHES OF COARSE AGGREGATE BEDDING BETWEEN PIPE AND ROCK.
- C. DO NOT LAY PIPE WHEN WEATHER OR TRENCH CONDITIONS ARE UNSUITABLE.
- D. CUT PIPE IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS. NO WELDING, FLAME CUTTING OR FLAME TAPPING WILL BE ALLOWED. ALL CUTS IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE MADE BY THE CONTRACTOR WITHOUT EXTRA COMPENSATION.
- E. ALL SANITARY SEWER PIPE SHALL BE SDR 26 PVC UNLESS OTHERWISE SPECIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER.
- 3.02 LAY GRAVITY SEWERS SO AS TO MAINTAIN A TRUE ALIGNMENT AND GRADE AS INDICATED ON DRAWINGS. AFTER COMPLETION, THE PIPE SHALL EXHIBIT A FULL CIRCLE OF LIGHT WHEN LIGHTED AT ONE MANHOLE AND VIEWED FROM THE NEXT.
 - A. THE CONTRACTOR SHALL VERIFY DEPTHS AND DIAMETERS OF EXISTING SEWER, AND LOCATIONS OF LATERAL TIES AS CALLED FOR ON PROJECT PLANS PRIOR TO INITIATING PIPE LAYING OPERATIONS TO ENSURE ADEQUATE FALL FOR ALL NEWLY INSTALLED SEWERS. AFTER THE TRENCH FOUNDATION HAS BEEN PROPERLY GRADED TO RECEIVE THE PIPE, THE PIPE SHALL BE CAREFULLY LOWERED INTO THE TRENCH WITH APPROVED METHODS. UNDER NO CIRCUMSTANCES SHALL THE PIPE OR ACCESSORIES BE DROPPED OR DUMPED INTO THE TRENCH. ALL DAMAGED PIPE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. COMMENCE LAYING GRAVITY SEWERS AT THE LOWEST POINT ON A SECTION OF LINE AND LAY PIPE WITH THE BELL ENDS UPHILL. THE CONTRACTORS SHALL LEAVE AT LEAST 4 JOINTS EXPOSED FOR INSPECTION PURPOSES DURING THE WORKING DAY AND PROVIDE SUITABLE SAFE ACCESS FOR INSPECTION. ANY DEFECTS NOTED SHALL BE MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE.
 - B. PIPE JOINT. PREPARATORY TO MAKING PIPE JOINTS ON GRAVITY SEWER LINES, CLEAN AND DRY ALL SURFACES OF JOINT PIPE AND JOINTING MATERIAL. USE LUBRICANTS, PRIMERS, ADHESIVES, AND SIMILAR MATERIALS AS RECOMMENDED BY THE MANUFACTURERS. PLACE, FIT, JOIN, AND ADJUST THE JOINTING MATERIALS OR FACTORY FABRICATED JOINTS AS RECOMMENDED BY THE MANUFACTURER TO OBTAIN THE DEGREE OF WATERTIGHTNESS REQUIRED. AS SOON AS POSSIBLE AFTER THE JOINT IS MADE, PLACE SUFFICIENT BACKFILL MATERIAL, AS SPECIFIED UNDER SECTION 02220 TRENCHING AND BACKFILLING, ALONG EACH SIDE OF THE PIPE TO RESIST FORCES THAT MIGHT TEND TO MOVE THE PIPE OFF LINE AND GRADE.
 - C. BACKFILL AS SPECIFIED UNDER SECTION 02220 TRENCHING AND BACKFILLING. PLACE BACKFILL OVER THE PIPE IMMEDIATELY AFTER THE PIPE HAS BEEN LAID.
 - D. ENCASE ALL UNDER STREAMBED CROSSINGS IN CLASS A3 CONCRETE PER STANDARD DETAILS. RAVINE, ABOVEGROUND, OVERHEAD, AND OVERWATER CROSSINGS SHALL BE ADEQUATELY SUPPORTED BY PIPE SUPPORT PIERS AS

SHOWN ON STANDARD DETAILS. KRAFT PAPER SHALL BE PLACED BETWEEN ALL PIPE, CONCRETE, AND STEEL STRAP CONTACT POINTS.

- E. WHENEVER PIPE LAYING IS SUSPENDED, THE UPPER END OF THE PIPE SHALL BE PLUGGED TO KEEP OUT DIRT, WATER, ANIMALS AND OTHER FOREIGN MATTER OR SUBSTANCES. THIS PLUG SHALL BE KEPT IN THE END OF THE PIPE LINE AT ALL TIMES WHEN LAYING IS NOT IN ACTUAL PROGRESS.
- SEWER LATERALS SHALL BE CONNECTED TO THE MAIN BY MEANS OF AN IN-LINE MONOLITHIC WYE OR WITH A TAP AND SADDLE INSTALLED OVER A HOLE CUT IN THE TOP QUADRANT OF EXISTING SEWERS AT AN ANGLE OF FORTY-FIVE DEGREES, WITH RESPECT TO FLOW DIRECTION. THE HOLE SHALL BE CUT WITH A MECHANICAL CIRCULAR TYPE SAW CUTTER DESIGNED FOR THE PARTICULAR USE AND RENDERING A SMOOTH UNIFORM CUT WITH NO DAMAGE TO THE MAIN AND IS ONE WHICH RETRIEVES THE PLUG. THE COST FOR SUCH CUT-INS SHALL BE INCLUDED IN THE COST OF THE LATERAL. A COMBINATION WYE IS TO BE PROVIDED AT THE CLEANOUT SET AT THE PROPERTY LINE. ALL LATERALS ARE TO BE LEFT EXPOSED UNTIL THEY CAN BE INSPECTED. LATERAL TRENCH SUPPORT, BEDDING, AND BACKFILL SHALL CONFORM TO SPECIFICATIONS FOR SEWER MAINS. ALL WYES, SADDLES, LATERALS, AND CLEANOUT ASSEMBLIES SHALL BE EMBEDDED IN VDOT #57 STONE. WHERE LATERALS ARE BORED, THE ENTIRE SEWER SERVICE FROM MAIN TO PROPERTY LINE SHALL BE DUCTILE IRON PIPE. THE FACE OF THE BORE PIT SHALL BE A MINIMUM DISTANCE OF FIVE FEET FROM THE EDGE OF THE PAVEMENT ON EITHER SIDE. LATERALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAILS.
- G. ALL SEWERS LAID ON GRADES OVER 20 PERCENT SHALL BE CONSTRUCTED OF DIP WITH CONCRETE ANCHORS PLACED ON BELL ENDS, OR AT THE SPACING SHOWN ON THE PLANS. ANCHORS SHALL BE CONSTRUCTED ACCORDING TO STANDARD DETAILS.

3.03 JOIN MECHANICAL JOINT PIPE AS FOLLOWS:

- A. THOROUGHLY CLEAN INSIDE OF THE BELL AND 8 INCHES OF THE OUTSIDE OF THE SPIGOT END OF THE JOINING PIPE TO REMOVE OIL, GRIT, EXCESS COATING, AND OTHER FOREIGN MATTER FROM THE JOINT. PAINT THE BELL AND THE SPIGOT WITH SOAP SOLUTION (HALF CUP GRANULATED SOAP DISSOLVED IN 1 GALLON WATER). SLIP CAST-IRON GLAND ON SPIGOT END WITH LIP EXTENSION OF GLAND TOWARD END OF PIPE. PAINT RUBBER GASKET WITH OR DIP INTO THE SOAP SOLUTION AND PLACE ON THE SPIGOT END WITH THICK EDGE TOWARD THE GLAND.
- B. PUSH THE SPIGOT END FORWARD TO SEAT IN THE BELL. THEN CAREFULLY PRESS THE GASKET INTO THE BELL SO THAT IT IS LOCATED EVENLY AROUND THE JOINT. MOVE THE GLAND INTO POSITION, INSERT BOLTS, AND SCREW NUTS UP FINGER TIGHT. THEN TIGHTEN ALL NUTS TO TORQUE LISTED BELOW IN ACCORDANCE WITH AWWA C600.

BOLTS SIZE - INCHES	TORQUE FEET - POUNDS
5/8	45 - 60
3/4	75 - 90
1	100 - 120
1-1/4	120 - 150

- C. TIGHTEN NUTS ON ALTERNATE SIDES OF THE GLAND UNTIL PRESSURE ON THE GLAND IS EQUALLY DISTRIBUTED.
- 3.04 JOIN PUSH-ON JOINT PIPE AS FOLLOWS:

- A. THOROUGHLY CLEAN INSIDE OF THE BELL AND 8 INCHES OF THE OUTSIDE OF THE SPIGOT END OF THE JOINING PIPE TO REMOVE OIL, GRIT, EXCESS COATING, AND OTHER FOREIGN MATTER. FLEX RUBBER GASKET AND INSERT IN THE GASKET RECESS OF THE BELL SOCKET. APPLY A THIN FILM OF GASKET LUBRICANT SUPPLIED BY PIPE MANUFACTURER TO EITHER THE GASKET OR THE SPIGOT END OF THE JOINING PIPE.
- B. START SPIGOT END OF PIPE INTO SOCKET WITH CARE. THE JOINT SHALL THEN BE COMPLETED BY FORCING THE PLAIN END TO THE BOTTOM OF THE SOCKET WITH A FORKED TOOL OR JACK TYPE DEVICE. FIELD CUT PIPE SHALL HAVE THE END FILED TO MATCH THE MANUFACTURED SPIGOT END.
- 3.05 JOIN CONCRETE PIPE WITH RUBBER GASKETS INSTALLED AS RECOMMENDED BY THE MANUFACTURER.
- 3.06 JOIN POLYVINYLCHLORIDE (PVC) PIPE AS RECOMMENDED BY THE MANUFACTURER USING RUBBER RING GASKETS IN BELL JOINTS OR SOLVENT WELD AS APPLICABLE.
 - A. INSTALL PVC GRAVITY SEWER PIPE AND FITTINGS IN ACCORDANCE WITH ASTM D 2321 "UNDERGROUND INSTALLATION OF FLEXIBLE THERMOPLASTIC SEWER PIPE" AS IT RELATES TO CLASS I EMBEDMENT MATERIALS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. REFER TO STANDARD DETAILS IN THESE SPECIFICATIONS FOR ADDITIONAL BEDDING AND BACKFILL REQUIREMENTS. MAXIMUM DEPTH OF BURY FOR PVC SDR26 PVC PIPE IS 22 FEET TO THE TOP OF THE PIPE, MINIMUM COVER REQUIRED IS 3 FEET.
 - B. STORE PVC GRAVITY SEWER PIPE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON FLAT EVEN SURFACES AND MAINTAIN RACKED ON THE PALLETS AS DELIVERED TO THE JOB SITE UNTIL SUCH TIME AS THE TRENCH IS READY FOR PLACEMENT OF THE PIPE; I.E., PVC PIPE SHALL NOT BE STRUNG OUT ON THE JOB SITE. ANY PIPE DAMAGED AS A RESULT OF IMPROPER STORAGE SHALL NOT BE INSTALLED.
- 3.07 JOIN PIPE OF DIFFERENT MATERIALS BY A CONCRETE COLLAR, RETAINER GLAND, OR FERNCO FLEXIBLE COUPLING. ALL FERNCO COUPLINGS SHALL BE BEDDED IN CONCRETE 4 INCHES THICK, EXTENDING TO SPRINGLINE OF THE FITTING, CONCRETE SHALL EXTEND FOR 6 INCHES ON EITHER EDGE OF FERNCO FITTING TO PROVIDE SUPPLEMENTAL SUPPORT ACROSS THE FLEXIBLE JOINT. PRICE FOR INSTALLING FERNCO SHALL INCLUDE THE COST FOR CONCRETE SUPPORT CRADLE.
- 3.08 CONSTRUCT MANHOLES USING PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.

 MANHOLES SHALL BE INSTALLED VERTICALLY PLUMB WITH CONCRETE INVERT CHANNELS
 IN ACCORDANCE WITH STANDARD DETAILS. ALL LIFT RINGS SHALL BE REMOVED AND
 HOLES PLUGGED WITH NON-SHRINK GROUT. MANHOLD COVER FRAMES SHALL BE BOLTED
 TO MANHOLE WITH BOLTS IN ACCORDANCE WITH STANDARD DETAILS. BUTYL SEALANT
 SHALL BE INSTALLED BETWEEN THE FRAME AND THE CONE OR ADJUSTING RING. FRAME
 AND COVERS SHALL BE INSTALLED TO MATCH PLANNED FINISHED ELEVATION.
 ADJUSTMENTS SHALL BE MADE AS NECESSARY TO ACHIEVE FINISHED ELEVATION. THE
 USE OF GRADE ADJUSTMENT MATERIALS, (BRICK, CONCRETE AND IRON RINGS), SHALL
 BE MINIMIZED AND SHALL NOT EXCEED 12-INCHES ABOVE THE CONE OR FLAT TOP
 ASSEMBLY. CONES SHALL BE ROTATED SO THE MANHOLE FRAME AND COVER IS OUTSIDE
 WHEEL PATH WHEN MANHOLES ARE LOCATED IN ROADWAYS.
- 3.09 DROP MANHOLES SHALL BE CONSTRUCTED AS CALLED FOR ON PLANS, EXTERIOR DROPS ARE TO BE USED UNLESS UTILITY CONFLICTS DICTATE OTHERWISE. EXTERIOR DROP CONNECTIONS SHALL BE CONSTRUCTED OF DIP AND MECHANICAL JOINT FITTINGS. INTERIOR DROP CONNECTIONS SHALL CONSIST OF SCHEDULE 40 PVC PIPE WITH SOLVENT CEMENT JOINTS. THE ENTIRE STACK, INCLUDING ELBOW, VERTICAL SECTION OF PIPE AND TEE WITH AN OUTSTANDING OPEN-END TEE WITH PLUG, SHALL BE

STRAPPED TO THE INSIDE WALL OF THE MANHOLE WITH STAINLESS STEEL BANDS LAGGED INTO WALL OF THE MANHOLE WITH STAINLESS STEEL EXPANSION BOLTS. A MINIMUM OF 2 STEEL BANDS SHALL BE INSTALLED AT A DISTANCE OF NO GREATER THAN 4 FEET ON CENTER. DROPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAILS.

3.10 REHABILITATION OF EXISTING MANHOLE WITH WATERPROOF SEALER

- A. PROVIDE ONE 1-INCH THICK COAT OF QUADEX QM-1S RESTORE TO ALL EXISTING MANHOLES INDICATED TO BE REHABILITATED BY WATERPROOFING. FOLLOW MANUFACTURER'S RECOMMENDATION ON PREPARATION AND APPLICATION OF QM-1S RESTORE. PIPE TO MANHOLE CONNECTIONS SHALL BE REHABILITATED WITH WATER STOPPING CEMENT, WET-PLUG OR APPROVED EQUAL PRIOR TO MANHOLE REHABILITATION, OR WHEN MAKING NEW CONNECTIONS TO EXISTING BRICK OR BLOCK MANHOLES.
- 3.11 INSTALL DETECTABLE TAPE ACCORDING TO MANUFACTURER'S RECOMMENDATION IN TRENCH ABOVE NONMETALLIC PIPE.
- 3.12 STEEL AERIAL PIPE SHALL MEET THE LENGTH, THICKNESS, AND DIAMETER SHOWN ON THE PLANS AND IS TO BE JOINED BY WELDING. THE PIPE SHALL BE BEVELED AND PREPARED FOR FIELD WELDING AT THE CIRCUMFERENTIAL JOINTS. JOINING OF STEEL PIPE SHALL MEET THE REQUIREMENTS OF AWWA C206. PIPE SUPPORT PIERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAILS. KRAFT PAPER SHALL BE PLACED BETWEEN PIPE AND ALL POINTS OF CONTACT WITH CONCRETE AND STEEL STRAPS. UPON COMPLETION OF INSTALLATION, PAINT THE EXTERIOR OF THE PIPE WITH COAL TAR ENAMEL.
- 3.13 BORING, TUNNELING, AND STEEL ENCASEMENT PIPE SHALL MEET THE LENGTH, THICKNESS AND DIAMETER AS SHOWN ON PLANS AND STANDARD DETAILS. THE CONTRACTOR SHALL SUBMIT COMPLETE DETAILS OF SHEETING, SHORING AND BRACING AND OTHER RELEVANT MATERIALS AND EQUIPMENT PERTINENT TO THE BORING AND TUNNELING OPERATION TO THE ENGINEER FOR APPROVAL. CONSTRUCTION SHALL BE EXECUTED IN SUCH A MANNER AS TO PREVENT SETTLEMENT OF THE GROUND SURFACE ABOVE THE PIPELINE. CASING AND TUNNEL LINER INSTALLATION SHALL FOLLOW THE HEAD EXCAVATION AS CLOSELY AS POSSIBLE. INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 302.03 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS OR AREMA, AS APPLICABLE. JOINING OF STEEL CASING PIPE SHALL MEET THE REQUIREMENTS OF AWWA C206, STANDARDS FOR FIELD WELDING STEEL WATER PIPE JOINTS. CASING SHALL BE INSTALLED BY JACKING, BORING, OR OPEN CUTS AS INDICATED ON THE DRAWINGS. END ENCASEMENT, SPACING SPIDERS, AND DRAINAGE SHALL BE PROVIDED AS SHOWN ON STANDARD DETAILS.

3.14 TESTING GRAVITY SEWER LINES AND MANHOLES:

- A. MANHOLE SHALL PASS A VISUAL AND VACUUM TEST ACCORDING TO THE FOLLOWING PROCEDURES. THE TEST SHALL BE MADE USING AN INFLATABLE COMPRESSION BAND, VACUUM PUMP, AND APPURTENANCES SPECIFICALLY DESIGNED FOR VACUUM TESTING MANHOLES. TEST PROCEDURES SHALL BE IN ACCORDANCE WITH ASTM C 1244 EXCEPT THE MORE RESTRICTIVE REQUIREMENT IN (3) AS INDICATED BELOW. EQUIPMENT SHALL BE MANUFACTURED BY PETER A. GLAZIER & ASSOCIATES, WORCHESTER, MASSACHUSETTS.
 - (1) MANHOLES MAY BE TESTED BY VACUUM TEST IMMEDIATELY AFTER ASSEMBLY OF THE MANHOLE, FRAMES, AND CONNECTING PIPES AND BEFORE ANY BACKFILL IS PLACED AROUND THE MANHOLES. HOWEVER, FINAL ACCEPTANCE SHALL BE BASED ONLY UPON A TEST AFTER THE MANHOLE IS

- BACKFILLED AND THE COVER FRAME CASTINGS ARE SET IN PLACE. TEST SHALL INCLUDE ASSESSMENT OF FRAME SEAL TO MANHOLE RISER.
- (2) ALL LIFT HOLES SHALL BE PLUGGED WITH NONSHRINK GROUT AND ALL PIPES SHALL BE PLUGGED, TAKING CARE TO SECURELY BRACE THE PLUGS AND PIPE. PLUGS SHALL BE TIED TO AN IMMOBILE OBJECT.
- (3) AFTER THE TESTING EQUIPMENT IS IN PLACE, A VACUUM OF 10 INCHES OF HG SHALL BE DRAWN ON THE MANHOLE. THE MANHOLE WILL BE CONSIDERED TO HAVE PASSED THE TEST IF THE VACUUM DOES NOT DROP MORE THAN 1 INCH OF HG WITHIN 60 SECONDS FOR MANHOLES 7 FEET IN DEPTH OR LESS AND 90 SECONDS FOR MANHOLES OVER 7 FEET DEEP. ADD AN ADDITIONAL 15 SECONDS TO THESE TIMES FOR TESTING 60-INCH MANHOLES AND 30 SECONDS TO THESE TIMES FOR TESTING 72-INCH MANHOLES.
- (4) IF THE MANHOLE FAILS THE INITIAL TEST, THE CONTRACTOR SHALL LOCATE THE LEAKAGE AND MAKE PROPER REPAIRS. LEAKS SHALL BE REPAIRED ON THE OUTSIDE OF THE MANHOLE UNLESS APPROVED OTHERWISE, AND THEN RETESTED UNTIL A SATISFACTORY TEST RESULT IS OBTAINED. IF JOINT MASTIC MATERIAL IS COMPLETELY PULLED OUT DURING THE VACUUM TEST, THE MANHOLE SHALL BE DISASSEMBLED AND THE MASTIC REPLACED.
- (5) AFTER THE MANHOLES HAVE BEEN BACKFILLED AND THE COVER FRAME CASTING SEALED IN PLACE, AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, ANY SIGNS OF LEAKS OR WEEPING VISIBLE FROM THE INSIDE OF THE MANHOLE SHALL BE REPAIRED AND THE MANHOLE MADE WATERTIGHT AND TESTED.
- B. TEST FOR LEAKAGE OF INSTALLED GRAVITY SEWERS BY LOW PRESSURE AIR TEST, EXFILTRATION, OR INFILTRATION TEST AS APPROVED AND TO THE SATISFACTION OF THE ENGINEER. TESTS SHALL BE CONDUCTED ON SHORT SECTIONS OF SEWER LINE; I.E., BETWEEN MANHOLES OR AT THE END OF EACH DAY'S WORK. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT NECESSARY TO MAKE THE TESTS. EQUIPMENT AND METHODS USED SHALL BE ACCEPTABLE TO THE ENGINEER. MONITORING GAGES SHALL BE SUBJECT TO CALIBRATION IF DEEMED NECESSARY BY THE ENGINEER. SEWER LINES, REGARDLESS OF SIZE, THAT CROSS UNDER OR OVER STREAMS SHALL BE TESTED FOR AND EXHIBIT ZERO INFILTRATION. IF ANY PART OF THE SEWER LINE FAILS THE LEAKAGE TEST, THE PROBLEM SHALL BE CORRECTED BY THE CONTRACTOR. IF THE PROBLEM IS FOUND AT PIPE JOINTS THEN THE AFFECTED JOINTS SHALL BE PRESSURE GROUTED. ALL NEW LATERALS SHALL BE TESTED ALONG WITH THE SEWER LINE.
- C. LOW PRESSURE AIR TESTS MAY ONLY BE USED ON PIPE DIAMETERS 12 INCHES OR LESS AND SHALL COMPLY WITH APPROPRIATE ASTM STANDARD.
 - (1) IF THE PIPE TO BE TESTED IS SUBMERGED IN GROUNDWATER, THE TEST PRESSURE SHALL BE INCREASED 1.0 PSI FOR EVERY 2.31 FEET THE GROUNDWATER LEVEL IS ABOVE THE INVERT OF THE SEWER. TO DETERMINE GROUNDWATER LEVEL, THE CONTRACTOR SHALL INSTALL A 4-INCH PVC PIPE ON THE OUTSIDE OF THE MANHOLE FROM THE BASE OF THE MANHOLE TO ABOVE GROUND LEVEL. THE BOTTOM OF THIS PIPE SHALL BE PLACED IN A MINIMUM OF 18 INCHES OF PIPE BEDDING MATERIAL TO ALLOW GROUNDWATER TO ENTER THE BOTTOM OF THE PIPE. IMMEDIATELY PRIOR TO THE LINE TEST, THE GROUNDWATER ELEVATION SHALL BE DETERMINED BY MEASURING DOWN TO THE SURFACE OF THE WATER IN THE PVC PIPE FROM GROUND LEVEL. THE PVC PIPE SHALL BE

- CUT OFF BELOW GRADE AND CAPPED OR FILLED AFTER AN ACCEPTABLE TEST HAS BEEN OBTAINED.
- (2) OTHER METHODS OF DETERMINING GROUNDWATER LEVEL MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER.
- (3) IT IS EXTREMELY IMPORTANT THAT THE VARIOUS PLUGS BE INSTALLED AND BRACED IN SUCH A WAY AS TO PREVENT BLOWOUTS. INASMUCH AS A FORCE OF 250 POUNDS (1112N) IS EXERTED ON AN 8-INCH (203-MILLIMETER) PLUG BY AN INTERNAL PIPE PRESSURE OF 5 PSI (34 KPA), IT SHOULD BE REALIZED THAT SUDDEN EXPULSION OF A POORLY INSTALLED PLUG OR OF A PLUG THAT IS PARTIALLY DEFLATED BEFORE THE PIPE PRESSURE IS RELEASED CAN BE DANGEROUS.

AS A SAFETY PRECAUTION, PRESSURIZING EQUIPMENT SHALL INCLUDE A REGULATOR OR RELIEF VALVE SET AT 10 PSI (69 KPA) TO AVOID OVER-PRESSURIZING AND DAMAGING AN OTHERWISE ACCEPTABLE LINE. NO ONE SHALL BE ALLOWED IN THE MANHOLES DURING TESTING. ALL PLUGS SHALL BE SECURED WITH TETHERS TO IMMOBILE OBJECT TO INSURE THEY ARE NOT FLUSHED DOWNSTREAM AS THEY ARE REMOVED.

- (4) TABLES: AIR TEST TABLES AT THE END OF THIS SECTION WERE PREPARED IN ACCORDANCE WITH ASTM C 924 (CONCRETE PIPE) AND F1417.92 (PLASTIC PIPE) FORMULAS.
- D. SAFETY AND OPERATION PROCEDURES RECOMMENDED BY THE EQUIPMENT MANUFACTURER SHALL BE REVIEWED AND ADHERED TO AT ALL TIMES.
- E. ALLOWABLE LEAKAGE OF PIPE USING INFILTRATION/EXFILTRATION TEST SHALL BE LIMITED TO 100 GALLONS PER DAY PER INCH DIAMETER PER MILE OR 2,400 GALLONS PER DAY, WHICHEVER IS LESS. IF GROUNDWATER IS 4 FEET ABOVE TOP OF PIPE, USE INFILTRATION TEST. IF GROUNDWATER IS LESS THAN 4 FEET ABOVE TOP OF PIPE, FILL PIPE AND UPSTREAM MANHOLE TO PRODUCE A MINIMUM 4-FOOT HEAD OVER THE TOP OF PIPE, LET STAND FOR 12 HOURS, REFILL MANHOLE TO ORIGINAL LEVEL, AND CONDUCT EXFILTRATION TEST FOR 1 HOUR.
- F. UPON COMPLETION OF INSTALLATION AND TESTING THE ENGINEER MAY INSPECT THE WORK IN WHOLE OR IN PART AND MAKE SUCH TESTS AS NECESSARY TO ENSURE EVERY PORTION OF THE CONTRACT REQUIREMENTS HAVE BEEN FAITHFULLY CARRIED OUT. IF DEFECTS ARE SUSPECTED THE ENGINEER MAY REQUIRE WORK TO BE UNCOVERED FOR INSPECTION AND/OR TESTING AT CONTRACTOR EXPENSE. IF NO DEFECTS ARE FOUND, OR DEFECTS WERE NOT THE DUE TO THE CONTRACTOR'S OPERATIONS, EXPENSES SHALL BE REIMBURSED IN ACCORDANCE WITH THE CONTRACT PROVISIONS.
- 3.15 SEWER LINES DESIGNATED TO BE LEFT IN PLACE AND ABANDONED SHALL BE PLUGGED AT THE LOWER END AND FILLED WITH FLOWABLE FILL PUMPED INTO THE LINE UNTIL IT IS COMPLETELY FILLED. MANHOLES TO BE ABANDONED SHALL HAVE ALL PIPE CONNECTIONS PLUGGED WITH A 12-INCH THICK PLUG OF CLASS A3 CONCRETE, THEN THE MANHOLE FILLED WITH COMPACTED COARSE AGGREGATE TO GRADE IF IN A PAVED AREA, OR 18-INCHES BELOW GRADE IF OFF ROAD. THE REMAINING HEIGHT IN OFF ROAD AREAS IS TO BE FILLED WITH CLEAN EARTH FILL TO MATCH SURROUNDING GRADE. EARTH FILL SHALL BE LAID ON A LAYER OF AASHTO TYPE III GRADE SEPARATION AND STABILIZATION GEOTEXTILE LAID OVER THE STONE.

AIR TEST TABLE CONCRETE GRAVITY SEWER PIPE BASED ON ASTM C 924

MINIMUM TEST TIME IN MINUTES: SECONDS FOR PRESSURE DROP FROM 3.5 TO 2.5 PSIG

(IN)	MINIMUM SPECIFIED TIME (T) REQUIRED FOR 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF CONCRETE PIPE INDICATED										
CONCRETE PE DIAMETER D	SPECIFICATION TIME FOR LENGTH SHOWN (MIN:SEC)										
PIPE	10 50 100 150 200 250 300 350 400 450 500 FT FT							1			
6	0:04 0:21 0:42 1:03 1:24 1:45 2:06 2:27 2:48 3:09 3:30								3:30		
8	0:07	0:36	1:12	1:48	2:24	3:00	3:36	4:12	4:48	5:24	6:00
10	0:09	0:45	1:30	2:15	3:00	3:45	4:30	5:15	6:00	6:45	7:30
12	0:11	0:54	1:48	2:42	3:36	4:30	5:24	6:18	7:12	8:06	9:00

AIR TEST TABLE PVC GRAVITY SEWER BASED ON ASTM F1417.92 (1998)

MINIMUM TEST TIME IN MINUTES: SECONDS FOR PRESSURE DROP FROM 3.5 TO 2.5 PSIG

PLASTIC PIPE DIAMETER D (IN)	MINIMUM TIME T (MIN:SEC)	LENGTH FOR MINIMUM TIME L (FT)	TIME FOR LONGER LENGTH (SEC)	PRESSURE DROP FOR SI: INI ALLOWABLE LEAKAGE Q = 0 INTERNAL PI T = 0 K=0.000419DL FOR SPECIFICATION TIME FO			SIZE AND INDICATED 0.0015 (PIPE SUR = 0.085DE OR K > 1,	E AND LENGTH OF PVC PIPE CICATED 0015 CFT/MIN. PER SQ.FT. OF PE SURFACE AREA .085DK/Q K > 1, OTHERWISE K=1 R LENGTH SHOWN (MIN:SEC)			
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	
6	5:40	398	.854 L	5:40 5:40 5:40 5:40 5:40 5:42 6:24						6:24	
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	
12	11:20	199	3.418 L	11:20	11:20 11:20 11:24 14:15 17:05 19:56 22:47						

ABOVE TABLE BASED ON UNI-BELL PVC PIPE ASSOCIATION, "RECOMMENDED PRACTICE FOR LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE", STANDARD UNI-B-6-98 AND METHODS OF ASTM F1417.92 (1998). REFERENCE UNI-B-6-98 FOR COMPUTATION OF TEST TIMES WHERE LATERAL SEWERS NEED TO BE CONSIDERED DURING TESTING.

SECTION 02750 - SEWER LINE CLEANING

1. GENERAL

- DESCRIPTION: SEWER LINES TO RECEIVE A LINER SHALL BE CLEANED. THE SEWER LINE CLEANING SHALL REMOVE FOREIGN MATERIALS FROM THE LINES AND RESTORE THE SEWER TO A MINIMUM OF 95 PERCENT OF THE ORIGINAL CARRYING CAPACITY OR AS REQUIRED FOR PROPER SEATING OF AN INTERNAL PIPE LINER. IT IS RECOGNIZED THAT THERE ARE SOME CONDITIONS SUCH AS BROKEN PIPE AND MAJOR BLOCKAGES THAT PREVENT CLEANING FROM BEING ACCOMPLISHED OR WHERE ADDITIONAL DAMAGE WOULD RESULT IF CLEANING WERE ATTEMPTED OR CONTINUED. SHOULD SUCH CONDITIONS BE ENCOUNTERED, THE CONTRACTOR WILL NOT BE REQUIRED TO CLEAN THOSE SPECIFIC SECTIONS. IF IN THE COURSE OF NORMAL CLEANING OPERATIONS, DAMAGE DOES RESULT FROM PRE-EXISTING AND UNFORESEEN CONDITIONS SUCH AS BROKEN PIPE, THE CONTRACTOR WILL NOT BE HELD RESPONSIBLE.
- 1.02 SUBMIT WRITTEN DESCRIPTION OF CLEANING PROCEDURE AND ALL EQUIPMENT TO BE USED.

2. EQUIPMENT

- 2.01 HIGH-VELOCITY JET (HYDROCLEANING) EQUIPMENT: ALL HIGH-VELOCITY SEWER CLEANING EQUIPMENT SHALL BE CONSTRUCTED FOR EASE AND SAFETY OF OPERATION. THE EQUIPMENT SHALL HAVE A SELECTION OF TWO OR MORE HIGH-VELOCITY NOZZLES. THE NOZZLES SHALL BE CAPABLE OF PRODUCING A SCOURING ACTION FROM 15 TO 45 DEGREES IN ALL SIZE LINES DESIGNATED TO BE CLEANED. EQUIPMENT SHALL ALSO INCLUDE A HIGH-VELOCITY GUN FOR WASHING AND SCOURING MANHOLE WALLS AND FLOOR. THE GUN SHALL BE CAPABLE OF PRODUCING FLOWS FROM A FINE SPRAY TO A SOLID STREAM. THE EQUIPMENT SHALL CARRY ITS OWN WATER TANK, AUXILIARY ENGINES, PUMPS, AND HYDRAULICALLY DRIVEN HOSE REEL.
- 2.02 CLEANING PRECAUTIONS: DURING SEWER CLEANING OPERATIONS, SATISFACTORY PRECAUTIONS SHALL BE TAKEN IN THE USE OF CLEANING EQUIPMENT TO INSURE THAT THE WATER PRESSURE CREATED DOES NOT DAMAGE OR CAUSE FLOODING OF PROPERTY OR BUILDINGS BEING SERVED BY THE SEWER.

3. EXECUTION

- 3.01 SEWER CLEANING: THE DESIGNATED SEWER SECTIONS SHALL BE CLEANED USING HIGH-VELOCITY JET EQUIPMENT. THE EQUIPMENT SHALL BE CAPABLE OF REMOVING DIRT, GREASE, ROCKS, SAND, AND OTHER MATERIALS AND OBSTRUCTIONS FROM THE SEWER LINES AND MANHOLES. IF CLEANING OF AN ENTIRE SECTION CANNOT BE SUCCESSFULLY PERFORMED FROM ONE MANHOLE, THE EQUIPMENT SHALL BE SET UP ON THE OTHER MANHOLE AND CLEANING AGAIN ATTEMPTED. IF, AGAIN, SUCCESSFUL CLEANING CANNOT BE PERFORMED OR THE EQUIPMENT FAILS TO TRAVERSE THE ENTIRE SECTION, IT WILL BE ASSUMED THAT A MAJOR BLOCKAGE EXISTS AND THE CLEANING EFFORT SHALL BE ABANDONED.
- 3.02 ROOT REMOVAL: ROOTS SHALL BE REMOVED IN THE SECTIONS WHERE ROOT INTRUSION IS A PROBLEM. SPECIAL ATTENTION SHOULD BE USED DURING THE CLEANING OPERATION TO ASSURE ALMOST COMPLETE REMOVAL OF ROOTS FROM THE JOINTS. ROOTS WHICH COULD PREVENT INSTALLATION OF A PIPE LINER SHALL BE REMOVED. PROCEDURES MAY INCLUDE THE USE OF MECHANICAL EQUIPMENT SUCH AS RODDING MACHINES, BUCKET MACHINES, AND WINCHES USING ROOT CUTTERS AND PORCUPINES, AND EQUIPMENT SUCH AS HIGH-VELOCITY JET CLEANERS.

- 3.03 MATERIAL REMOVAL: SLUDGE, DIRT, SAND, ROCKS, GREASE, AND OTHER SOLID OR SEMISOLID MATERIAL RESULTING FROM THE CLEANING OPERATION SHALL BE REMOVED AT THE DOWNSTREAM MANHOLE OF THE SECTION BEING CLEANED, LOADED IN A SUITABLE CONTAINER, TRANSPORTED TO THE NEAREST WASTEWATER TREATMENT FACILITY, AND DISPOSED OF AT THAT FACILITY IN ACCORDANCE WITH ALL REQUIREMENTS AND CHARGES.
- 3.04 CLEANING WATER DISPOSAL: WATER USED TO CLEAN THE SEWER LINES SHALL BE DISCHARGED INTO THE SANITARY SEWER DOWNSTREAM OF THE CLEANING OPERATION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR DISCHARGE WATER USED TO CLEAN SEWER LINES ONTO THE GROUND OR INTO STREAMS.
- 3.05 FINAL ACCEPTANCE: ACCEPTANCE OF SEWER LINE CLEANING SHALL BE MADE UPON THE SUCCESSFUL COMPLETION OF THE TELEVISION INSPECTION AND SHALL BE TO THE SATISFACTION OF THE ENGINEER. IF TV INSPECTION SHOWS THE CLEANING TO BE UNSATISFACTORY, THE CONTRACTOR SHALL BE REQUIRED TO RECLEAN AND REINSPECT THE SEWER LINE UNTIL THE CLEANING IS SHOWN TO BE SATISFACTORY.
- 3.06 ALL NEW SEWERS SHALL BE CLEANED PRIOR TO BEING PLACED IN SERVICE AS DIRECTED BY THE ENGINEER TO INCLUDE CAPTURE OF DEBRIS AT ADJACENT DOWNSTREAM MANHOLE, REMOVAL AND DISPOSAL OF DEBRIS.

SECTION 02760 - TELEVISION INSPECTION OF SEWER LINES

- 1. GENERAL
- 1.01 AFTER CLEANING SEWER LINES TO RECEIVE A LINER AND AFTER INSTALLATION OF THE LINER, THE DESIGNATED SECTIONS SHALL BE VISUALLY INSPECTED BY MEANS OF CLOSED-CIRCUIT TELEVISION. THE INSPECTION SHALL BE DONE ONE SECTION AT A TIME.
- 1.02 SUBMIT A WRITTEN DESCRIPTION OF PROCEDURES TO BE USED.
- 2. EOUIPMENT
- 2.01 THE TELEVISION CAMERA USED FOR THE INSPECTION SHALL BE ONE SPECIFICALLY DESIGNED AND CONSTRUCTED FOR SUCH INSPECTION. LIGHTING FOR THE CAMERA SHALL BE SUITABLE TO ALLOW A CLEAR PICTURE OF THE ENTIRE PERIPHERY OF THE PIPE. THE CAMERA SHALL BE OPERATIVE IN 100 PERCENT HUMIDITY CONDITIONS. THE CAMERA, TELEVISION MONITOR, AND OTHER COMPONENTS OF THE VIDEO SYSTEM SHALL BE CAPABLE OF PRODUCING PICTURE QUALITY TO THE SATISFACTION OF THE ENGINEER; AND IF UNSATISFACTORY, EQUIPMENT SHALL BE REMOVED AND NO PAYMENT WILL BE MADE FOR AN UNSATISFACTORY INSPECTION.

3. EXECUTION

- 3.01 MOVE THE CAMERA THROUGH THE LINE IN EITHER DIRECTION AT A MODERATE RATE, STOPPING WHEN NECESSARY TO PERMIT PROPER DOCUMENTATION OF THE SEWER'S CONDITION. IN NO CASE PULL TELEVISION CAMERA AT A SPEED GREATER THAN 30 FEET PER MINUTE. USE MANUAL WINCHES, POWER WINCHES, TV CABLE, AND POWERED REWINDS OR OTHER DEVICES THAT DO NOT OBSTRUCT THE CAMERA VIEW OR INTERFERE WITH PROPER DOCUMENTATION OF THE SEWER CONDITIONS TO MOVE THE CAMERA THROUGH THE SEWER LINE. IF, DURING THE INSPECTION OPERATION, THE TELEVISION CAMERA WILL NOT PASS THROUGH THE ENTIRE SECTION, SET UP EQUIPMENT SO THAT THE INSPECTION CAN BE PERFORMED FROM THE OPPOSITE MANHOLE. IF, AGAIN, THE CAMERA FAILS TO PASS THROUGH THE ENTIRE SECTION, THE OBSTRUCTION SHALL BE CLEARED BY CLEANING, ROOT REMOVAL, OR POINT REPAIR AS DIRECTED BY THE ENGINEER AND THE SECTION REINSPECTED.
- 3.02 WHEN MANUALLY OPERATED WINCHES ARE USED TO PULL THE TELEVISION CAMERA THROUGH THE LINE, SET UP TELEPHONES OR OTHER SUITABLE MEANS OF COMMUNICATION BETWEEN THE TWO MANHOLES OF THE SECTION BEING INSPECTED TO INSURE GOOD COMMUNICATIONS BETWEEN MEMBERS OF THE CREW.
- 3.03 THE IMPORTANCE OF ACCURATE DISTANCE MEASUREMENTS IS EMPHASIZED.

 MEASUREMENT FOR LOCATION OF DEFECTS SHALL BE ABOVEGROUND BY MEANS OF A
 METER DEVICE. MARKING ON THE CABLE, OR THE LIKE, WHICH WOULD REQUIRE
 INTERPOLATION FOR DEPTH OF MANHOLE, WILL NOT BE ALLOWED. CHECK ACCURACY
 OF THE DISTANCE METER BY USE OF A WALKING METER, ROLL-A-TAPE, OR OTHER
 SUITABLE DEVICE. THE ACCURACY SHALL BE SATISFACTORY TO THE ENGINEER.
- 3.04 DOCUMENTATION OF THE TELEVISION RESULTS SHALL BE AS FOLLOWS:
 - A. TELEVISION INSPECTION LOGS: KEEP PRINTED LOCATION RECORDS THAT CLEARLY SHOW THE LOCATION IN RELATION TO AN ADJACENT MANHOLE OF EACH INFILTRATION POINT OBSERVED DURING INSPECTION. IN ADDITION, RECORD OTHER POINTS OF SIGNIFICANCE SUCH AS LOCATIONS OF BUILDING SEWERS, UNUSUAL CONDITIONS, ROOTS, STORM SEWER CONNECTIONS, BROKEN PIPE, PRESENCE OF SCALE AND CORROSION, AND OTHER DISCERNIBLE FEATURES. SUPPLY A COPY OF SUCH RECORDS TO THE OWNER.

- B. PHOTOGRAPHS: MAKE INSTANT DEVELOPING, 35 MM, OR OTHER STANDARD-SIZE PHOTOGRAPHS OF THE TELEVISION PICTURE OF PROBLEMS UPON REQUEST OF THE ENGINEER, AS LONG AS SUCH PHOTOGRAPHING DOES NOT INTERFERE WITH THE CONTRACTOR'S OPERATIONS.
- C. VIDEOTAPE RECORDINGS: PROVIDE THE OWNER WITH TWO COPIES OF A VISUAL AND AUDIO RECORD OF ALL AREAS OF THE LINES THAT MAY BE REPLAYED.

SECTION 02770 - SEWER FLOW CONTROL

- 1. GENERAL
- 1.01 FOR LINING, TELEVISING, OR REPLACING EXISTING SEWERS, THE FLOW IN THE SECTION BEING WORKED SHALL BE BYPASSED USING PUMPS.
- 1.02 FOR TELEVISION INSPECTION OF SEWER LINES, THE DEPTH OF FLOW OF THE SECTION BEING WORKED SHALL BE REDUCED, PLUGGED OR BLOCKED, OR BYPASSED USING PUMPS.
- 1.03 DEPTH OF FLOW SHALL NOT EXCEED THAT SHOWN BELOW FOR THE RESPECTIVE PIPE SIZES AS MEASURED IN THE MANHOLE WHEN PERFORMING TELEVISION INSPECTION.
- 1.04 FLOW CONTROL PRECAUTIONS: WHEN FLOW IN A SEWER LINE IS PLUGGED, BLOCKED, OR BYPASSED, SUFFICIENT PRECAUTIONS SHALL BE TAKEN TO PROTECT THE SEWER LINES FROM DAMAGE THAT MIGHT RESULT FROM SEWER SURCHARGING.
- 1.05 SUBMIT WRITTEN DESCRIPTION OF FLOW CONTROL AND ALL EQUIPMENT TO BE USED.
- 2. MATERIALS: NOT USED
- 3. EXECUTION
- 3.01 PLUGGING OR BLOCKING: A SEWER LINE PLUG SHALL BE INSERTED INTO THE LINE UPSTREAM OF THE SECTION BEING WORKED. THE PLUG SHALL BE SO DESIGNED THAT ALL OR ANY PORTION OF THE SEWAGE CAN BE RELEASED. DURING TV INSPECTION, FLOW SHALL BE REDUCED TO WITHIN THE LIMITS SPECIFIED ABOVE. AFTER THE WORK HAS BEEN COMPLETED, FLOW SHALL BE RESTORED TO NORMAL.
- PUMPING AND BYPASSING: WHEN PUMPING AND BYPASSING ARE REQUIRED, PROVIDE THE PUMPS, CONDUITS, AND OTHER EQUIPMENT TO DIVERT THE FLOW OF SEWAGE AROUND THE SECTION IN WHICH WORK IS TO BE PERFORMED. THE BYPASS SYSTEM SHALL BE OF SUFFICIENT CAPACITY TO HANDLE EXISTING FLOW PLUS ADDITIONAL FLOW THAT MAY OCCUR DURING A RAINSTORM. PROVIDE THE NECESSARY LABOR AND SUPERVISION TO SET UP AND OPERATE THE PUMPING AND BYPASSING SYSTEM. IF PUMPING IS REQUIRED ON A 24-HOUR BASIS, ENGINES SHALL BE EQUIPPED IN A MANNER TO KEEP NOISE TO A MINIMUM AND THE EQUIPMENT SHALL BE MANNED CONTINUOUSLY.
- 3.03 PLUGGED OR BY-PASSED SEWER LINES SHALL NOT BE ALLOWED TO OVERFLOW OR DISCHARGE ONTO THE GROUND OR INTO STREAMS EXCEPT DURING RAINFALL EVENTS THAT WOULD NORMALLY ACTIVATE A PERMITTED COMBINED SEWER OVERFLOW.

SECTION 02780 - LINER FOR SEWER REHABILITATION

1. GENERAL

- 1.01 DESCRIPTION: THE WORK TO BE PERFORMED SHALL CONSIST OF THE REHABILITATION OF EXISTING SANITARY SEWER PIPE BY THE CURED-IN-PLACE PIPE (CIPP) PROCESS OR FOLD AND FORM (FF) PROCESS WITH THE INSTALLATION OF A FLEXIBLE LINER INTO THE EXISTING SANITARY SEWER MAIN. PROVIDE ALL WORK AND MATERIALS TO PERFORM THE FOLLOWING:
 - A. CLEAN ALL SEWER SECTIONS DESIGNATED FOR REHABILITATION USING HIGH-VELOCITY WATER JET EQUIPMENT IN ACCORDANCE WITH SECTION 02750.
 - B. PERFORM A TELEVISION INSPECTION OF THE DESIGNATED SEWER SECTIONS BEFORE AND AFTER THE REHABILITATION PROCESS IN ACCORDANCE WITH SECTION 02760.
 - C. PROVIDE BYPASS PUMPING OF FLOW AROUND ALL SEWER SECTIONS BEING REHABILITATED IN ACCORDANCE WITH SECTION 02770.
 - D. REMOVE OBSTRUCTIONS AND INTRUDING SERVICE LATERALS.
 - E. REHABILITATE EXISTING SANITARY SEWERS USING THE CIPP PROCESS OR FF PROCESS.
 - F. PERFORM ALL WORK NECESSARY TO RECONNECT SEWER LATERALS.
- 1.02 SAFETY: THE CONTRACTOR SHALL CARRY OUT HIS OPERATIONS IN STRICT ACCORDANCE WITH ALL APPLICABLE OSHA STANDARDS. PARTICULAR ATTENTION IS DRAWN TO THOSE SAFETY REQUIREMENTS INVOLVING WORKING WITH SCAFFOLDING AND ENTERING CONFINED SPACES.
- 1.03 REFERENCE STANDARDS ARE REFERRED TO BY ABBREVIATIONS AS FOLLOWS:
 - A. AMERICAN SOCIETY FOR TESTING AND MATERIALS......ASTM
- THE LINER SHALL BE FABRICATED TO A SIZE AND LENGTH THAT, WHEN INSTALLED, SHALL NEATLY FIT THE INTERNAL CIRCUMFERENCE OF THE SEWER LINE SECTION TO BE LINED AS SHOWN ON THE DRAWINGS OR AS DETERMINED BY THE TELEVISED INSPECTION. ALLOWANCE SHALL BE GIVEN FOR EXCESS PIPE (RIB) WHEN THE CROSS-SECTIONAL AREAS HAVE BEEN REDUCED DUE TO OFFSET JOINTS, PARTIAL COLLAPSE, OUT OF ROUND SECTIONS, AND THE LIKE.
- 1.05 SUBMIT WRITTEN DESCRIPTION OF PROCEDURES, EQUIPMENT, AND PRODUCTS TO BE USED AND CERTIFIED COPIES OF TEST REPORTS THAT INDICATE THE APPLICABLE STANDARDS HAVE BEEN MET.
- 1.06 THE CONTRACTOR SHALL COMPLETELY REMOVE AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND SURPLUS, AND UNSUITABLE MATERIALS AT THE END OF EACH WORK DAY AT NO ADDITIONAL COST TO THE OWNER.
- 1.07 WHENEVER THE CONTRACTOR DESIRES TO USE A HYDRANT FOR WATER SUPPLY, THE CONTRACTOR SHALL OBTAIN THE PERMISSION OF THE OWNER. ALL COSTS ASSOCIATED WITH THE USE OF WATER SUPPLIED FROM HYDRANTS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE DEEMED TO BE INCLUDED IN THE BID.

2. PRODUCTS

2.01 MATERIALS FOR CURED-IN-PLACE PROCESS

A. THE CURED-IN-PLACE PIPE PROCESS SHALL CONSIST OF A FLEXIBLE TUBE OR LINER THAT HAS BEEN IMPREGNATED WITH A THERMOSETTING RESIN WHICH IS RESISTANT TO ATTACK BY NORMAL COMPONENTS OF DOMESTIC SEWAGE. THE RESIN SHALL BE THERMALLY CURED TO FORM A HARD IMPERMEABLE PIPE WHICH CONFORMS TO THE FOLLOWING MINIMUM VALUES WHEN TESTED IN ACCORDANCE WITH ASTM F 1216.

FLEXURAL STRESS 4,500 PSI ASTM D 790 MOD.
FLEXURAL MODULUS 250,000 PSI ASTM D 790 MOD.
OF ELASTICITY

- B. THE LINER THICKNESS SHALL BE BASED ON THE FOLLOWING PHYSICAL CONDITIONS OF THE EXISTING SANITARY SEWER PIPE.
 - (1) PIPES SHALL BE CONSIDERED FULLY DETERIORATED.
 - (2) PIPES SHALL BE SUBJECT TO FULL SOIL LOAD OF 120 POUNDS/CF, APPLICABLE LIVE LOAD, AND WATER TABLE 5 FEET BELOW GROUND.
 - (3) PIPES SHALL BE CONSIDERED TO HAVE A MINIMUM OF 2 PERCENT OVALITY IN THE CIRCUMFERENCE.
- C. BASED ON THE ABOVE PHYSICAL CONDITIONS, THE LINER SHALL HAVE THE FOLLOWING MINIMUM THICKNESS IN MILLIMETERS IN ACCORDANCE WITH ASTM F 1216 UNLESS MODIFIED BY THE ENGINEER BASED ON FIELD INFORMATION AND CALCULATIONS SUBMITTED BY THE CONTRACTOR.

PIPE INVERT DEPTH NORMAL PIPE SIZE UP TO 10 FT. 10 FT. TO 15 FT. 15 FT. AND UP (INCHES) (MILLIMETERS) (MILLIMETERS) 6 4.5 4.5 4.5 6.0 8 6.0 6.0 6.0 7.5 9.0 12.0 10 6.0 7.5 6.0 7.5 9.0 9.0 12 15 10.0 18 13.5 21 10.5 13.5 15.0 16.5 24 12.0 15.0

D. ACCEPTABLE CURED-IN-PLACE PROCESS SHALL BE "INSITUFORM," OR "MASTERLINER" AND SHALL BE FURNISHED AND INSTALLED BY A LICENSED CONTRACTOR FOR THE RESPECTIVE PROCESS.

2.02 MATERIALS FOR FOLD AND FORM PROCESS

- A. THE SEWER LINER PIPE AND FITTINGS SHALL BE MANUFACTURED FROM THE FOLLOWING:
 - (1) HIGH DENSITY POLYETHYLENE PIPE COMPOUND WHICH CONFORMS TO ASTM D 1248 AND MEETS THE REQUIREMENTS FOR TYPE PE34, CLASS C PRODUCT. PIPE MADE FROM THIS COMPOUND SHALL HAVE A LONG-TERM HYDROSTATIC STRENGTH RATING OF 1,600 PSI OR MORE, IN ACCORDANCE WITH ASTM D 2837. WHEN THE ENVIRONMENTAL STRESS CRACK RESISTANCE (ESCR) OF

THE COMPOUND IS MEASURED IN ACCORDANCE WITH ASTM D 1693, CONDITION C, THE COMPOUND SHALL WITHSTAND NOT LESS THAN 192 HOURS IN 100 PERCENT SOLUTION IGEPAL CO-630 AT 100 DEGREES F BEFORE REACHING A 20 PERCENT FAILURE POINT (F20).

- (2) POLYVINYL CHLORIDE ALLOY PIPE COMPOUND WHICH CONFORMS TO ASTM D 1784 CELL CLASSIFICATION 12111-C, 12344-B, OR 12334-B. PIPE MADE FROM THIS COMPOUND SHALL HAVE A LONG-TERM HYDROSTATIC STRENGTH RATING OF 1,600 PSI OR MORE, IN ACCORDANCE WITH ASTM D 2837.
- B. PHYSICAL STRENGTH: THE LINER PIPE SHALL CONFORM TO THE MINIMUM STRUCTURAL STANDARDS, AS LISTED BELOW:

U.S. STANDARD	RESULTS	
FLEXURAL STRESS (YIELD)	ASTM D 638	3,300 PSI
FLEXURAL STRESS (BREAK)	ASTM D 638	4,500 PSI
FLEXURAL MODULUS OF ELASTICITY	ASTM D 790	145,000 PSI

- C. HIGH DENSITY POLYETHYLENE LINER MATERIAL TESTS: TESTS FOR COMPLIANCE WITH THIS SPECIFICATION SHALL BE MADE ACCORDING TO ASTM F 1533. A CERTIFICATE OF COMPLIANCE WITH THIS SPECIFICATION SHALL BE PROVIDED BY THE MANUFACTURER FOR ALL HIGH DENSITY POLYETHYLENE MATERIAL FURNISHED ACCORDING TO THIS SECTION.
- D. THE LINER THICKNESS SHALL BE BASED ON THE FOLLOWING PHYSICAL CONDITIONS OF THE EXISTING SANITARY SEWER PIPE.
 - (1) PIPES SHALL BE CONSIDERED FULLY DETERIORATED.
 - (2) PIPES SHALL BE SUBJECT TO FULL SOIL LOAD OF 120 POUNDS/CF, APPLICABLE LIVE LOAD, AND WATER TABLE 5 FEET BELOW GROUND.
 - (3) PIPES SHALL BE CONSIDERED TO HAVE A MINIMUM OF 2 PERCENT OVALITY IN THE CIRCUMFERENCE.
- E. ACCEPTABLE FOLD AND FORM PROCESSES SHALL BE "U-LINER PIPE," "NUPIPE," AND "ULTRALINER" AND SHALL BE FURNISHED AND INSTALLED BY A LICENSED CONTRACTOR OF THE RESPECTIVE PROCESS.
- F. SEALS BETWEEN FOLDED AND FORMED LINER AND HOST PIPE SHALL BE MADE USING A HYDROPHILIC WATER SEALING MATERIAL SUCH AS HYDROTITE BY GREENSTREAK OR APPROVED EQUAL.

3. EXECUTION

- 3.01 THE REHABILITATION OF THE SEWER MAIN SHALL BE PERFORMED WITHOUT THE NEED FOR EXCAVATION OR DEMOLITION OF EXISTING STRUCTURES, AND BE ABLE TO REESTABLISH USER LATERAL SERVICES WITHOUT EXCAVATION AND MINIMIZE THE DISRUPTIONS TO NEIGHBORING HOMES AND TRAFFIC. EXCAVATION FOR POINT REPAIRS OR EMERGENCIES SHALL BE PERMITTED, BUT ONLY AS REQUIRED AND DIRECTED BY THE ENGINEER.
- 3.02 THE FINISHED LINING SHALL BE JOINTLESS AND CONTINUOUS OVER THE ENTIRE LENGTH OF AN INSERTION RUN BETWEEN THE STARTING AND TERMINATING MANHOLES AND BE AS FREE AS COMMERCIALLY PRACTICABLE FROM VISUAL DEFECTS SUCH AS FOREIGN INCLUSIONS, DRY SPOTS, PINHOLES, AND DELAMINATIONS. IF THE PROPOSED METHOD OF INSERTING THE LINER REQUIRES THE MODIFICATION OF A

- MANHOLE, THE COST TO MODIFY AND REPAIR THE MANHOLE SHALL BE INCLUDED IN THE BID.
- 3.03 PRE-INSERTION CLEANING: CLEAN THE EXISTING SEWER PIPE IMMEDIATELY BEFORE THE PRE-INSERTION TELEVISION INSPECTION.
- 3.04 PRE-INSERTION TELEVISION INSPECTION: VIDEO (TV) THE SEWER PIPE IMMEDIATELY BEFORE THE INSERTION OF THE LINER, TO ASSURE THAT THE PIPE IS CLEAN AND EXISTING PIPE CONDITIONS ARE ACCEPTABLE FOR LINING.
- 3.05 BYPASSING SEWAGE: PROVIDE FOR CONTINUOUS SEWAGE FLOW AROUND THE SECTION(S) OF PIPE DESIGNATED FOR THE INSERTION OF LINERS AND SERVICE LATERALS CONNECTING TO THESE SECTIONS OF PIPE. THE PUMP BYPASS LINES SHALL BE OF ADEQUATE CAPACITY AND SIZE TO HANDLE THE FLOW IN ACCORDANCE WITH PROVISION OF RELEVANT SECTIONS IN THESE SPECIFICATIONS.
- 3.06 LINE OBSTRUCTIONS: IF PRE-INSERTION VIDEO (TV) INSPECTION REVEALS AN OBSTRUCTION IN THE EXISTING PIPE (SUCH AS HEAVY SOLIDS, DROPPED JOINTS, PROTRUDING SERVICE TAPS, OR COLLAPSED PIPE WHICH WILL PREVENT COMPLETION OF THE LINING PROCESS) THAT CANNOT BE REMOVED BY CONVENTIONAL SEWER CLEANING EQUIPMENT, THEN A POINT REPAIR SHALL BE MADE BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER.
- 3.07 THE CURED-IN-PLACE LINER SHALL BE INSTALLED AS FOLLOWS:
 - A. WET OUT: THE CONTRACTOR SHALL DESIGNATE A LOCATION WHERE THE LINER SHALL BE IMPREGNATED ("WETTED OUT") WITH RESIN TO THOROUGHLY SATURATE THE LINER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL INFORM THE ENGINEER IN ADVANCE TO INSPECT THE MATERIALS AND THE WET OUT PROCEDURE.
 - B. INSERTION: THE WETTED OUT TUBE SHALL BE TRANSPORTED AND KEPT IN A STABLE STATE UNTIL IT IS INSERTED THROUGH AN EXISTING MANHOLE BY APPROVED TECHNIQUES/PROCESS OF THE CONTRACTOR. THE INSERTION AREA, EQUIPMENT PLATFORM, ETC. SHALL BE SECURELY PROTECTED, AND ALL DAMAGED YARDS, DRIVEWAYS, WALKS, ETC. SHALL BE REPAIRED, AT NO COST TO THE OWNER.
 - C. CURING: AFTER THE INSERTION IS COMPLETED, THE CONTRACTOR SHALL USE A HEAT SOURCE TO UNIFORMLY HEAT THE LINER TO CURE THE RESIN IN THE LINER. THE CURING TEMPERATURES SHALL BE AS RECOMMENDED BY THE RESIN/CATALYST SYSTEM OF THE RESIN MANUFACTURER. THE HEAT SOURCE SHALL BE FITTED WITH SUITABLE MONITORS TO GAGE THE TEMPERATURE OF THE INCOMING AND OUTGOING HEAT SOURCE. INITIAL CURE MAY BE CONSIDERED COMPLETED WHEN THE EXPOSED PORTIONS OF THE LINER APPEAR TO BE HARD, AND THE REMOTE SENSING DEVICE INDICATES THE TEMPERATURES TO BE ADEQUATE, AS RECOMMENDED BY THE RESIN/CATALYST SYSTEM MANUFACTURER. CURING TEMPERATURES AND DURATION SHALL COMPLY WITH PREVIOUSLY SUBMITTED DATA AND INFORMATION.
 - D. FINISHED PIPE: THE FINISHED CIPP SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH FROM MANHOLE TO MANHOLE AND BE FREE FROM VISUAL DEFECTS SUCH AS FOREIGN INCLUSIONS, DRY SPOTS, KEEL, BOAT HULL, PINHOLES, WRINKLES, AND OTHER DEFORMITIES. THE LINER PASSING THROUGH OR TERMINATING IN A MANHOLE SHALL BE CAREFULLY CUT OUT IN A SHAPE AND MANNER APPROVED BY THE ENGINEER. THE INVERT AND BENCHES SHALL BE STREAMLINED AND IMPROVED FOR SMOOTH FLOW. THE AREA/ANNULAR SPACE BETWEEN EXISTING AND THE CIPP SHALL BE SEALED.

- E. SEALING AND BENCHES IN MANHOLE: THE CIPP SHALL MAKE A TIGHT FITTING SEAL WITH THE EXISTING PIPE(S) IN THE MANHOLE. A 1/2-INCH DIAMETER ACTIVATED OAKUM BAND SOAKED IN SCOTCH SEAL 5600 OR EQUAL SHALL BE APPLIED CIRCUMFERENTIALLY NEAR THE ANNUAL SPACE TOUCHING THE END OF EXISTING PIPE AND ENCASED WITH A CEMENTITIOUS MORTAR. TOP HALF OF THE PIPE SHALL BE NEATLY CUT OFF AND NOT BROKEN OR SHEARED OFF, AT LEAST 4 INCHES AWAY FROM THE WALLS. THE CHANNEL IN THE MANHOLE SHALL BE A SMOOTH CONTINUATION OF THE PIPE(S) AND SHALL BE MERGED WITH OTHER LINES OR CHANNELS, IF ANY. CHANNEL CROSS-SECTION SHALL BE USHAPED WITH A MINIMUM HEIGHT OF HALF PIPE DIAMETER, TO THREE-FOURTHS OF THE PIPE DIAMETER FOR 15 INCHES AND LARGER. THE SIDE OF THE CHANNELS SHALL BE BUILT UP WITH MORTAR/CONCRETE TO PROVIDE BENCHES AT A MAXIMUM OF 1 IN 12 PITCH TOWARDS THE CHANNEL.
- 3.08 THE FOLD AND FORM LINER SHALL BE INSTALLED AS INDICATED BELOW:
 - A. THE LINER SHALL BE INSERTED INTO THE EXISTING SEWER LINE WITH A POWER WINCH AND STEEL CABLE CONNECTED TO THE END OF THE LINER BY USE OF AN APPROPRIATE PULLING HEAD. A SECOND PULLING HEAD MAY BE ATTACHED TO THE OTHER END OF THE LINER FOR ATTACHMENT OF A TAG LINE TO PULL THE LINER BACK OUT OF THE SEWER LINE, IF NECESSARY. LENGTH OF THE LINER PIPE TO BE INSERTED AT ANY ONE TIME SHALL BE GOVERNED BY THE WINCH DRUM CAPACITY AND WINCHING POWER AVAILABLE AND CONSIDERATION OF THE SIZE AND CONDITION OF THE SEWER. DURING INSERTION, PRECAUTIONS SHOULD BE TAKEN TO PROTECT THE LINER PIPE TO PREVENT SCORING THE OUTSIDE OF THE LINER AS IT IS BEING PULLED INTO THE SEWER.
 - B. REFORMING: AFTER INSERTION IS COMPLETED, THE CONTRACTOR SHALL SUPPLY A SUITABLE HEAT/PRESSURE SOURCE AND WATER RECIRCULATION EQUIPMENT. THE EQUIPMENT SHALL BE CAPABLE OF DELIVERING HOT WATER/PRESSURE THROUGHOUT THE SECTION TO UNIFORMLY RAISE THE WATER TEMPERATURE ABOVE THE TEMPERATURE REQUIRED TO REFORM THE LINER.
 - C. THE HEAT SOURCE SHALL BE FITTED WITH SUITABLE MONITORS TO GAGE THE TEMPERATURE OF THE INCOMING AND OUTGOING WATER SUPPLY.
 - D. THE CONTRACTOR SHALL COOL THE LINER TO A TEMPERATURE BELOW 100 DEGREES F BEFORE RELIEVING THE REFORMING PRESSURE. COOL-DOWN MAY BE ACCOMPLISHED BY THE INTRODUCTION OF COOL WATER OR OTHER APPROVED METHOD INTO THE RECIRCULATION NETWORK.
 - E. FINISH: THE FINISHED LINER SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE INSERTION AND BE AS FREE AS COMMERCIALLY PRACTICABLE FROM VISUAL DEFECTS SUCH AS FOREIGN INCLUSIONS.
 - F. SEALING LINER AT MANHOLES: SEALS BETWEEN FOLDED AND FORMED LINER AND HOST PIPE SHALL BE MADE USING A HYDROPHILIC WATER SEALING MATERIAL SUCH AS HYDROTITE BY GREENSTREAK OR APPROVED EQUAL.
- 3.09 SERVICE RECONNECTIONS: THE EXACT LOCATION AND NUMBER OF SERVICE CONNECTIONS SHALL BE DETERMINED FROM TV TAPES AND/OR IN THE FIELD. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ACCURATELY FIELD LOCATE ALL EXISTING SERVICE CONNECTIONS. THE CONTRACTOR SHALL RECONNECT ALL SERVICE CONNECTIONS TO THE LINER PIPE. THE CONTRACTOR SHALL RESTORE/CORRECT WITHOUT ANY DELAY, ALL MISSED OR FAULTY RECONNECTIONS, AS WELL AS FOR ANY DAMAGE CAUSED FOR NOT RECONNECTING THE SERVICES SOON ENOUGH. ALL SERVICES WHICH ARE RECONNECTED TO REHABILITATED LINER SHALL BE SHOWN ON THE "RECORD DRAWINGS" WITH THE EXACT DISTANCE FROM THE NEAREST UPSTREAM/DOWNSTREAM MANHOLE. ALL EXISTING SERVICE CONNECTIONS SHALL BE RECONNECTED BY REMOTE TV CONTROLLED CUTTING DEVICE METHOD.

A. SERVICE CONNECTION BY REMOTE CUT

- (1) SERVICE CONNECTIONS SHALL BE DONE BY TV CONTROLLED REMOTE CUTTING DEVICE. THEY SHALL BE MADE BY EXPERIENCED OPERATORS SO THAT NO BLIND ATTEMPTS OR HOLES ARE MADE IN THE LINER. LOCATION SHALL BE REVERIFIED CAREFULLY WITH EARLIER TAPES FOR ACCURACY SPECIALLY WHERE DIMPLES ARE NOT DEFINED OR CLEARLY ASCERTAINED. THE ENGINEER RESERVES THE RIGHT TO REQUIRE SERVICE CONNECTION BY EXCAVATION AT CERTAIN LOCATIONS, IF THE QUALITY, WORKMANSHIP, AND APPROVAL RATING FOR REMOTE CUT IS POOR AND NOT SATISFACTORY.
- (2) THE REMOTE CUT SHALL BE SMOOTH AND CIRCULAR IN NATURE AS SEEN BY A 360-DEGREE TV CAMERA. THE HOLE SHALL BE A MAXIMUM OF 100 PERCENT AND A MINIMUM OF 90 PERCENT OF THE SERVICE PIPE DIAMETER. IT SHALL BE PROPERLY ALIGNED AND BE CONCENTRIC TO THE EXISTING CONNECTION. THE LOCATIONS OF ALL REMOTE CUTS SHALL BE VERIFIED CAREFULLY TO MATCH WITH EARLIER TAPES FOR THEIR EXACT LOCATIONS. EXCESS, WRONG HOLES, OR TRIAL CUTS SHALL NOT BE MADE AND SHALL BE REPAIRED AT NO COST TO THE OWNER. DEFECTIVE CONNECTIONS SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AT NO EXTRA COST. IF A REMOTE CUT CONNECTION IS TO BE RECTIFIED OR REPLACED WITH CONNECTION "BY EXCAVATION," IT SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
- 3.10 TESTING FOR ACCEPTANCE: VIDEO (TV) INSPECTION IN ACCORDANCE WITH SECTION 02760 SHALL BE PROVIDED AFTER THE LINER HAS BEEN INSTALLED IN THE EXISTING SEWER PIPE. THE TELEVISING SHALL BE DONE AFTER ALL SERVICE CONNECTIONS HAVE BEEN MADE. PAYMENT FOR LINING OF SEWER LINES WILL NOT BE MADE UNTIL THE ENGINEER HAS REVIEWED THE POST-LINING VIDEO TAPE AND ACCEPTED THE LINING.
- 3.11 FAILURE OF STRUCTURAL REHABILITATION LINER: IF A LINER FAILS TO REFORM/CURE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE THE FAILED LINER AT NO ADDITIONAL COST. THE WORK SHALL INCLUDE ALL MATERIAL, EXCAVATION, BACKFILLING, CUTTING CONCRETE, PIPE SHORING, TEMPORARY PAVEMENT, PERMANENT PAVEMENT, AND OTHER INCIDENTAL WORK REQUIRED TO REMOVE THE LINER FROM THE EXISTING PIPE. THE ENGINEER SHALL APPROVE ALL METHODS TO BE USED PRIOR TO STARTING WORK ON THIS ITEM.

SECTION 02930 - SEEDING

- 1. GENERAL
- 1.01 REFERENCE SPECIFICATIONS ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:
 - A. AMERICAN SOCIETY FOR TESTING AND MATERIALS......ASTM
- 1.02 SUBMITTALS: PROVIDE THE FOLLOWING IN A TIMELY MANNER IN ACCORDANCE WITH THE APPROVED SUBMITTALS SCHEDULE AS SPECIFIED IN DIVISION 1 GENERAL REQUIREMENTS
 - A. SUBMITTAL: FERTILIZER PRODUCT, DETAILED MANUFACTURER'S SPECIFICATION
 - B. SUBMITTAL: PERMANENT AND TEMPORARY SEEDING MIXES, MANUFACTURER'S SPECIFICATION
 - C. SUBMITTAL: TYPE II MULCH, PRODUCT SAMPLE AND SPECIFICATIONS
 - D. SUBMITTAL: TURF REINFORCEMENT MAT, PRODUCT SAMPLE, AND SPECIFICATIONS
- 1.02 MATERIALS SHALL BE DELIVERED IN UNBROKEN CONTAINERS, CLEARLY MARKED BY THE MANUFACTURER AS TO CONTENTS. SEED, LIMESTONE, AND FERTILIZER SHALL BE LABELED AS TO PROPORTIONS, ANALYSIS, AND QUALITY. STORE ALL MATERIALS IN A MANNER AFFORDING PROTECTION FROM DAMAGE BY WEATHER OR VANDALISM.
- 1.03 SEED ONLY WHEN WIND VELOCITY IS LESS THAN 15 MILES PER HOUR.
- 1.04 ALL SOIL AREAS DISTURBED BY THE CONTRACTOR DURING OR BY HIS CONSTRUCTION OPERATIONS SHALL BE PREPARED AND/OR SEEDED. WHENEVER THE DISTURBED AREA IS PART OF A RESIDENTIAL LAWN, IT SHALL BE HAND RAKED THUS REMOVING ROCKS AND CLODDED DIRT TO THE SATISFACTION OF THE ENGINEER AND THE PROPERTY OWNER. THE CONTRACTOR SHALL RESEED ANY AREAS WHERE A SUFFICIENT STAND OF GRASS IS NOT OBTAINED AS DETERMINED BY THE ENGINEER.
- 2. PRODUCTS
- 2.01 TOPSOIL SHALL BE THE TOP 6 INCHES OF ORIGINAL SOIL FROM THE SITE, UNLESS OTHERWISE NOTED ON THE DRAWINGS. TOPSOIL OBTAINED OFF-SITE SHALL BE FERTILE, FRIABLE LOAM, CONTAINING NOT LESS THAN 2 PERCENT BY WEIGHT OF FINELY DIVIDED, DECOMPOSED VEGETABLE MATTER. TOPSOIL SHALL BE FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS LARGER THAN 1/2 INCH DIAMETER, STONES LARGER THAN 1/2 INCH DIAMETER, AND OTHER MATERIAL TOXIC OR HARMFUL TO GROWTH.
- 2.02 FERTILIZER SHALL MEET REQUIREMENTS OF FEDERAL SPECIFICATION O-F-241.
 PROVIDE FERTILIZER THAT IS COMPLETE, INORGANIC, UNIFORM IN COMPOSITION,
 AND SUITABLE FOR APPLICATION WITH APPROVED EQUIPMENT. PROPORTIONS OF
 CONTROLLED RELEASE FERTILIZER NUTRIENTS SHALL BE MULTIPLES OF THE
 FOLLOWING:

- 5 POUNDS OF ACTUAL NITROGEN
- 10 POUNDS OF ACTUAL PHOSPHATE
- 5 POUNDS OF ACTUAL POTASH

OR

- 10 POUNDS OF ACTUAL NITROGEN
- 20 POUNDS OF ACTUAL PHOSPHATE
- 10 POUNDS OF ACTUAL POTASH
- 2.03 SEED TESTED WITHIN 6 MONTHS OF SOWING, SHALL HAVE THE FOLLOWING CHARACTERISTICS:
 - A. PERMANENT SEEDING: CONDUCT BETWEEN MARCH 1 AND APRIL 1 OR BETWEEN AUGUST 25 THROUGH SEPTEMBER 15

DEVELOPED LOTS/LAWN AREAS:

SPECIES	PERCEN WEIGHT	TAGES (ME PURITY	INIMUM) GERMINATION
ENVIROSHADE SEED BLEND*	95	98	90
REED CANARYGRASS	5	85	75
ANNUAL RYE (NURSE PLANT)	40 L	BS/ACRE	

UNDEVELOPED OFF ROAD AREAS:

	PERCEN	INIMUM)	
SPECIES	WEIGHT	PURITY	GERMINATION
ENVIROSHADE SEED BLEND*	60	98	90
UNSCARIFIED SERICEA LESPEDEZA	20	85	75
KOBE LESPEDEZA OR CROWNVETCH	20	85	75
ANNUAL RYE (NURSE PLANT)	40 LI	BS/ACRE	

- * OR APPROVED EQUAL ENVIROSHADE IS PRODUCED BY PENNINGTON SEED INCORPORATED
 - B. TEMPORARY SEEDING (OMIT LESPEDEZA IN DEVELOPED LOTS/LAWNS)

SEEDING DATE	PERCENTAGES SPECIES	•	•	GERM.	SEEDING RATE POUNDS PER ACRE
FEB 1 - MAY 1	ANNUAL RYE AND KOBE	70	98	85	120
	LESPEDEZA	30	98 .	85	50
MAY 1 - AUG 15	SMALL STEM				
	SUDANGRASS	100	98	80	50
AUG 15 - NOV 15	ANNUAL RYE	100	96	85	140
NOV 15 - FEB 1	WINTER RYE	100	96	85	140

2.04 LIME SHALL BE GROUND AGRICULTURAL GRADE LIMESTONE CONTAINING NOT LESS THAN 85 PERCENT CALCIUM AND MAGNESIUM CARBONATES. FINENESS SHALL BE SUCH THAT

- 100 PERCENT WILL PASS A NO. 20 SIEVE, AND NOT LESS THAN 50 PERCENT WILL PASS A NO. 100 SIEVE. BURNT LIME, HYDRATED LIME, OR PELLETIZED LIME MAY BE SUBSTITUTED IN EQUIVALENT CARBONATES, IF REQUESTED.
- 2.05 TYPE I MULCH COMPOSED OF THRESHED STRAW OF CEREAL GRAIN OR WOOD FIBER SHALL BE FREE OF OBJECTIONABLE WEED SEEDS OR OTHER HARMFUL MATERIAL.
- 2.06 TYPE II MULCH SHALL BE "HOLD/GRO" EROSION CONTROL FABRIC MANUFACTURED BY GULF STATES PAPER CORPORATION OR "CURLEX" BLANKETS MANUFACTURED BY THE AMERICAN EXCELSIOR COMPANY. THESE PRODUCTS ARE ACCEPTABLE FOR VDOT EC-2.
- 2.07 TURF REINFORCEMENT MATTING SHALL MEET THE PERFORMANCE REQUIREMENTS SHOWN ON THE PROJECT PLANS, FOR EACH SPECIFIC APPLICATION.
- 2.08 ASPHALT ADHESIVE FOR USE WITH TYPE I MULCH SHALL BE EMULSIFIED ASPHALT MEETING REQUIREMENTS OF ASTM D 977, GRADE SS-1.
- 2.09 SYNTHETIC MULCH BINDER FOR USE WITH TYPE I MULCH: AEROSPRAY, PETROSET, OR TERRA TACK.
- 2.10 STAPLES FOR USE WITH MULCH BLANKET OR TURF REINFORCEMENT MAT SHALL BE THE MORE STRINGENT OF PLAIN IRON WIRE, NO. 8 GAGE OR HEAVIER, BE 6 INCHES OR MORE IN LENGTH, OR MANUFACTURERS PRODUCT RECOMMENDATIONS FOR THE SPECIFIC APPLICATION SHOWN ON THE PLANS.
- 3. EXECUTION
- 3.01 TEMPORARY SEEDING
 - A. RESTORE TOPSOIL TO ORIGINAL DEPTH OR 6 INCHES IN ACCORDANCE WITH SPECIFICATION SECTION 02220, PARAGRAPH 3.09(G).
 - B. USE IN AREAS WHEN FINAL GRADING HAS NOT BEEN COMPLETED OR WHEN PERMANENT SEEDING CANNOT BE DONE DUE TO THE SPECIFIED PERMANENT SEEDING DATES, OR PROJECT SEQUENCING REQUIRES DISTURBING THE AREA IN A SECONDARY PHASE OF WORK.
 - C. APPLY FERTILIZER AT A RATE OF 15 POUNDS OF 10-20-10 PER 1,000 SQUARE FOOT (600 POUNDS PER ACRE) OR EQUIVALENT.
 - D. APPLY LIME AT A RATE OF 50 POUNDS PER 1,000 SQUARE FEET.
 - E. FOR LOOSE SOIL, WORK LIME AND FERTILIZER INTO SOIL AND THEN SEED. FOR PACKED OR HARD SOIL, LOOSEN TOP LAYER WHILE WORKING LIME AND FERTILIZER INTO SOIL AND THEN SEED AT THE RATE REQUIRED FOR THE TEMPORARY SEEDING SPECIES.
- 3.02 PREPARE SOIL FOR PERMANENT SEEDING AND HYDROSEEDING BY TILLAGE OF TOPSOIL IN PLACE TO LOOSEN THOROUGHLY AND BREAK UP ALL CLODS TO A DEPTH OF 6 INCHES. REMOVE ALL STUMPS AND ROOTS, COARSE VEGETATION, STONES LARGER THAN 1-1/2 INCHES, AND ALL CONSTRUCTION DEBRIS. SOIL SHALL BE WORKED BY SUITABLE AGRICULTURAL EQUIPMENT TO A DEPTH OF NOT LESS THAN 4 INCHES. RAKE TO A UNIFORM, SMOOTH, AND DRAINABLE SURFACE.
 - A. APPLY LIME AND FERTILIZER UNIFORMLY AND MIX WELL INTO TOP 4 INCHES OF SEED BED. APPLY LIME AT THE RATE OF 100 POUNDS PER 1,000 SQUARE FEET. APPLY FERTILIZER AT THE EQUIVALENT RATE OF 35 POUNDS OF 10-20-10 PER 1,000 SQUARE FEET. RATES SHOULD BE ADJUSTED FOR OTHER GRADES OF FERTILIZER. USE CONTROLLED RELEASE FERTILIZER AND LIME.

- 3.03 SOW PERMANENT GRASS SEED BETWEEN DATES OF MARCH 1 AND APRIL 1 OR SEPTEMBER 1 AND OCTOBER 15.
- 3.04 SOW SEED BY MECHANICAL SEEDER AS FOLLOWS:
 - A. MIX SEED THOROUGHLY WITH CLEAN DRY SAWDUST AND BROADCAST AT RATE OF 10 POUNDS OF GRASS SEED PER 1,000 SQUARE FEET IN CROSS DIRECTIONS TO ENSURE UNIFORM DISTRIBUTION. RAKE SURFACE LIGHTLY AND ROLL WITH APPROPRIATE TYPE OF LAWN ROLLER WEIGHING MAXIMUM OF 150 POUNDS PER FOOT OF WIDTH TO IMBED SEED 0.25 INCH IN THE TOPSOIL SURFACE.
 - B. APPLY EITHER TYPE I OR TYPE II MULCH.
 - (1) TYPE I MULCH: APPLY UNIFORMLY AT THE FOLLOWING RATES:

 STRAW 70-90 POUNDS PER 1,000 SQUARE FEET

 WOOD FIBER 25-50 POUNDS PER 1,000 SQUARE FEET
 - (2) ANCHOR MULCH BY THE FOLLOWING METHODS:

APPLY LIGHT TACK COAT OF ASPHALT EMULSION (10 GALLONS PER 1,000 SQUARE FEET).

IN RESIDENTIAL AREAS, APPLY A SYNTHETIC MULCH BINDER AT RATE RECOMMENDED BY MANUFACTURER.

ON SLOPES STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL, SECURE HEAVY JUTE MESH WITH STAPLES OVER TYPE I MULCH.

(3) TYPE II MULCH: APPLY ON SLOPES 3:1 OR STEEPER AND IN AREAS OF CONCENTRATED FLOW IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND AS SHOWN ON PROJECT PLANS.

3.05 SOW SEED BY HYDROSEEDING AS FOLLOWS:

- A. MIX LIME, SEED, FERTILIZER, AND WOOD CELLULOSE FIBER IN REQUIRED AMOUNT OF WATER TO PRODUCE A HOMOGENEOUS SLURRY. HYDROSEEDING MIX SHALL INCORPORATE A 16-45-7 SEED STARTING FERTILIZER TO PROMOTE GERMINATION AT A RATE OF 35 POUNDS PER ACRE. THE ABOVE INGREDIENTS SHALL BE ADDED AND MIXED IN THE FOLLOWING ORDER: LIME AT 15 POUNDS PER ACRE, SEED AT 260 POUNDS PER ACRE, FERTILIZER AT 35 POUNDS PER ACRE, AND AMPLE WOOD CELLULOSE FIBER TO MAKE A SLURRY. ALL INGREDIENTS ARE TO BE DESIGNED FOR USE IN HYDROSEEDING OPERATIONS. AFTER THOROUGHLY MIXED, APPLY UNIFORMLY AT THE RATE OF 260 POUNDS OF GRASS SEED PER ACRE, DRY WEIGHT.
- B. THE ABOVE MIXTURE SHALL BE APPLIED WITHIN 3.0 HOURS FROM THE TIME OF MIXING.
- C. ALL MIXTURES SHALL BE CONSTANTLY AGITATED FROM THE TIME THEY ARE MIXED UNTIL THEY ARE APPLIED TO THE SEED BED.
- D. IMMEDIATELY FOLLOWING THE APPLICATION OF THE SEED SLURRY MIX, MAKE SEPARATE APPLICATION OF WOOD CELLULOSE MULCH AT THE RATE OF 1,500 POUNDS, DRY WEIGHT, PER ACRE.

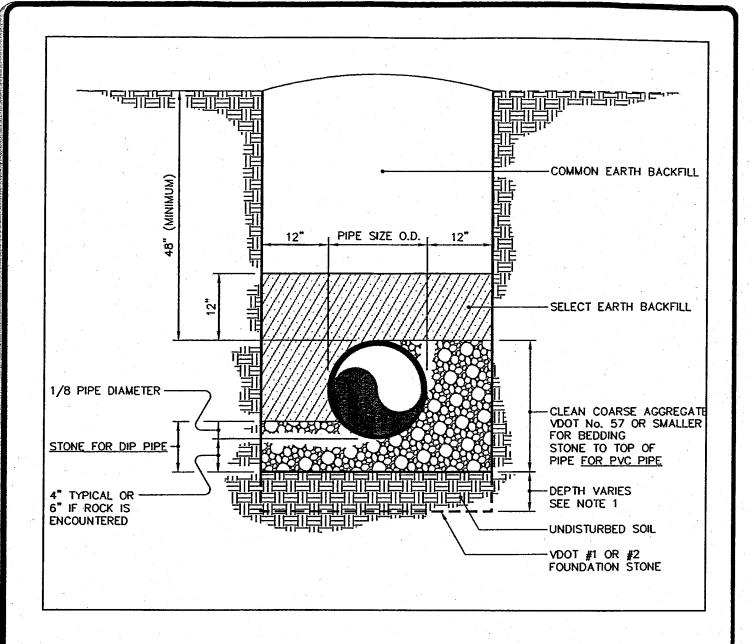
- E. APPLY A TYPE II MULCH ON SLOPES 3:1 OR STEEPER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 3.06 REMOVE ALL SOILING OR STAINING OF FINISHED WALKS, DRIVES, AND PARKING AREAS RESULTING FROM SEEDING WORK. MAINTAIN PAVED AREAS IN CLEAN CONDITION.
- 3.07 MAINTENANCE OF PERMANENT SEEDING
 - A. PROVIDE PERIODIC WATERING AS REQUIRED TO ASSIST WITH VEGETATION ESTABLISHMENT.
 - B. RESEED AND MULCH SPOTS LARGER THAN 1 SQUARE FOOT WHICH DO NOT EXHIBIT A UNIFORM STAND OF GRASS WITHIN 6 WEEKS, PROVIDE ADDITIONAL TOPSOIL AS REQUIRED.
 - C. IN THE EVENT THAT GROWTH IS NOT ESTABLISHED BY FINAL PROJECT INSPECTION, CONTINUE THE SPECIFIED ATTENTION UNTIL STAND IS ACCEPTED BY THE ENGINEER.
 - D. CORRECT OR REPAIR ALL UNDUE SETTLING AS EVIDENCED BY COMPLAINTS RECEIVED WITHIN 1 YEAR AFTER FINAL INSPECTION.

END OF SECTION

SANITARY RELATED STANDARD DETAILS

DETAIL #	SHEETS	DESCRIPTION
27.01A	SHEET 1:1	SANITARY SEWER LINE TRENCH DETAIL
27.02	SHEET 1:2	PRECAST CONCRETE 4' DIAMETER MANHOLE
27.02	SHEET 2:2	PRECAST CONCRETE 4' DIAMETER MANHOLE
27.03	SHEET 1:2	STANDARD 4' DIAMETER PRECAST FLAT TOP MANHOLE
27.03	SHEET 2:2	STANDARD 4' DIAMETER PRECAST FLAT TOP MANHOLE
27.04	SHEET 1:1	STANDARD INTERIOR DROP MANHOLE
27.05	SHEET 1:1	STANDARD EXTERIOR DROP MANHOLE
27.06	SHEET 1:2	STANDARD MANHOLE VENTING PIPE DETAIL
27.06	SHEET 2:2	STANDARD MANHOLE VENTING PIPE DETAIL
27.07	SHEET 1:2	PRECAST CONCRETE DOGHOUSE MANHOLE
27.07	SHEET 2:2	PRECAST CONCRETE DOGHOUSE MANHOLE
27.08		RESERVED FOR FUTURE USE
27.09	SHEET 1:1	LAMPSTACK FRAME AND COVER
27.10	SHEET 1:1	STANDARD MANHOLE FRAME AND COVER (SANITARY)
27.11	SHEET 1:1	STANDARD WATERPROOF FRAME AND COVER (SANITARY)
27.12		RESERVED FOR FUTURE USE
27.13	SHEET 1:1	STANDARD LAMPSTACK
27.14	SHEET 1:1	BUILDING CONNECTION HORIZONTAL WYE
27.15	SHEET 1:1	TYPICAL PVC SEWER LATERAL CLEANOUT WITH IN-LINE WYE
27.16	SHEET 1:1	TYPICAL LATERAL SADDLE DETAIL
27.17	SHEET 1:2	PIPE SUPPORT PIER FOR DRY LAND CROSSING
27.17	SHEET 2:2	PIPE SUPPORT PIER FOR DRY LAND CROSSING
27.18	SHEET 1:2	PIPE SUPPORT FOR WATER CROSSING
27.18	SHEET 2:2	PIPE SUPPORT FOR WATER CROSSING
27.19	SHEET 1:2	SEWER LINE CROSSING BENEATH STREAM BED
27.19	SHEET 2:2	SEWER LINE CROSSING BENEATH STREAM BED
27.20		RESERVED FOR FUTURE USE
27.21	SHEET 1:1	CONCRETE RESTRAINING ANCHOR
27.22	SHEET 1:1	PERMANENT STREAM FORDING DETAIL
27.23	SHEET 1:2	STEEL ENCASEMENT DETAIL
27.23	SHEET 2:2	STEEL ENCASEMENT DETAIL

END OF STANDARD DETAIL INDEX

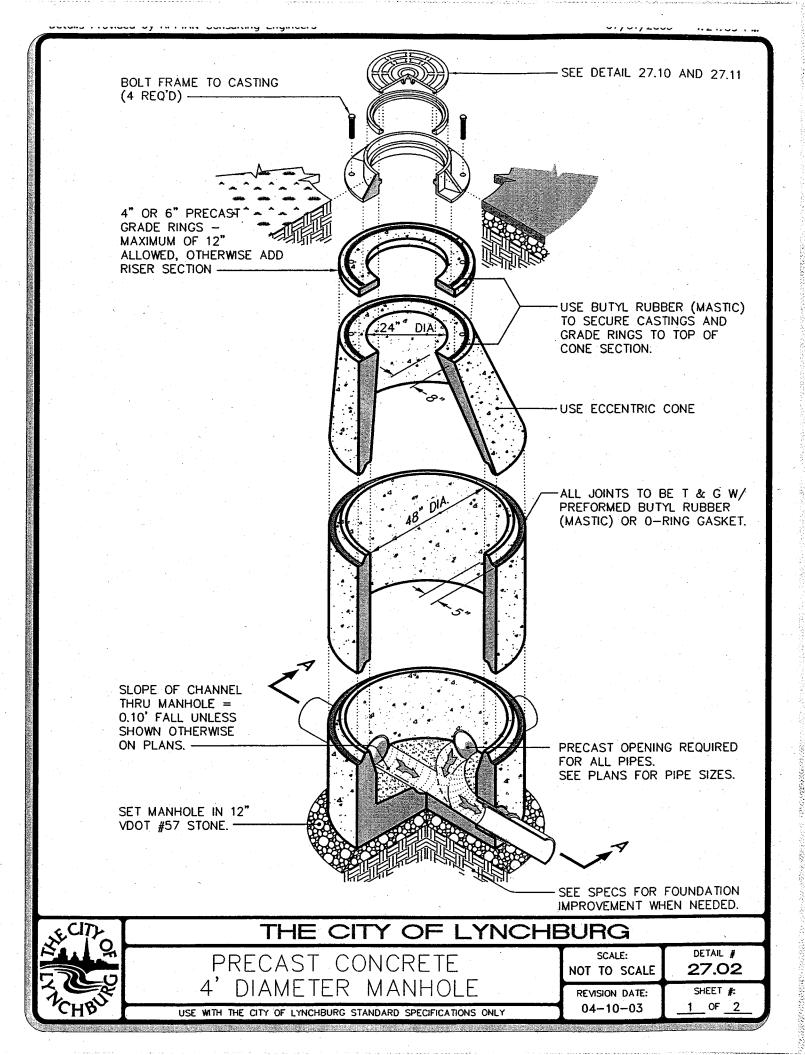


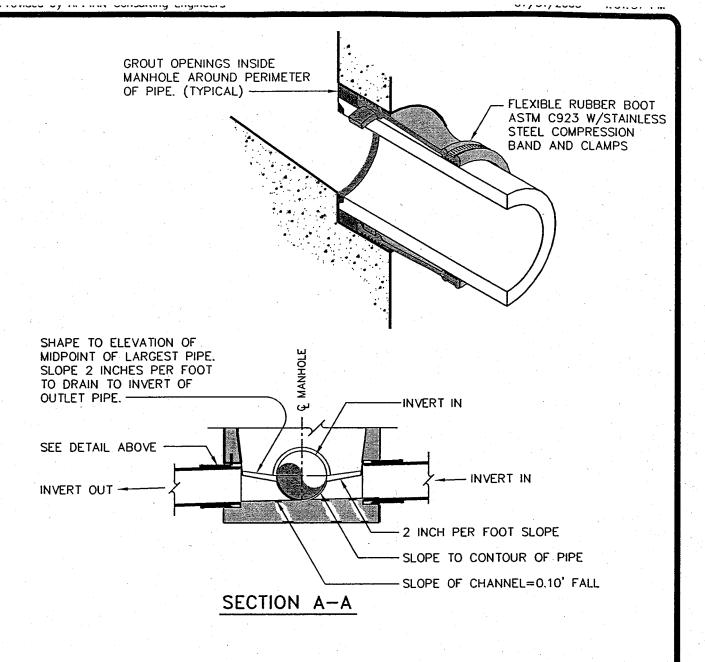
NOTES: VDOT #1 COARSE AGGREGATE FILL SHALL BE REQUIRED WHEN SOIL CONDITIONS ARE UNSUITABLE.

AN ADDITIONAL INCH OF BEDDING MATERIAL IS REQUIRED FOR EACH ADDITIONAL 2 FEET OF TRENCH DEPTH, WHEN TRENCH DEPTH IS OVER 16 FEET DEEP, UP TO A MAXIMUM BEDDING DEPTH OF 12 INCHES

ANY EXCAVATION BEYOND TRENCH LIMITS SHOWN ON DETAIL SHALL BE AT THE CONTRACTOR'S EXPENSE.







NOTES: A

- 1. ALL SERVICE LATERALS INTO MANHOLE TO BE CORE DRILLED AND BOOTED.
- 2. MAXIMUM DEPTH 4' DIAMETER MANHOLE = 20' (SEE SEWER DESIGN SECTION FOR OTHER REQUIREMENTS / LIMITATIONS).
- 3. THE INVERT SHAPING AS SHOWN SHALL CONSIST OF 3,000 PSI CONCRETE TROWELLED TO A SMOOTH SURFACE WITH NO AGGREGATE EXPOSED.
- 4. DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.
- 5. WHEN DIFFERENT DIAMETER PIPES ARE USED FROM INVERT IN TO INVERT OUT, PROVIDE A SMOOTH TRANSITION THROUGH THE INVERT.



THE CITY OF LYNCHBURG

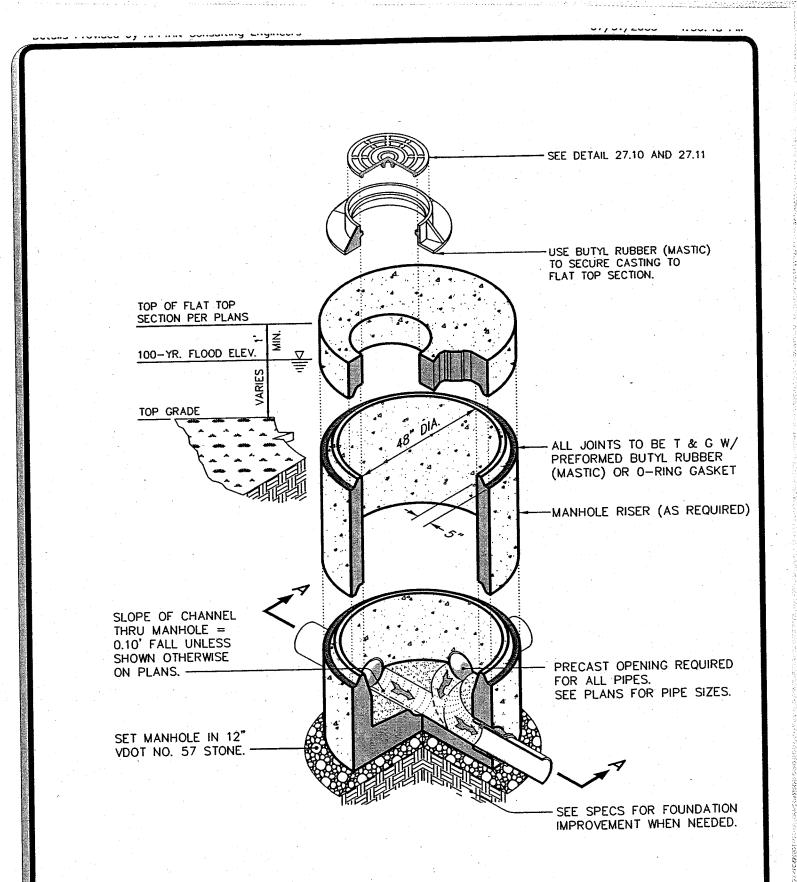
PRECAST CONCRETE 4' DIAMETER MANHOLE

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE: NOT TO SCALE DETAIL # 27.02
SHEET #:

REVISION DATE:

04-10-03 <u>2</u> of <u>2</u>





THE CITY OF LYNCHBURG

DIA. PRECAST STANDARD 4' FLAT TOP MANHOLE

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

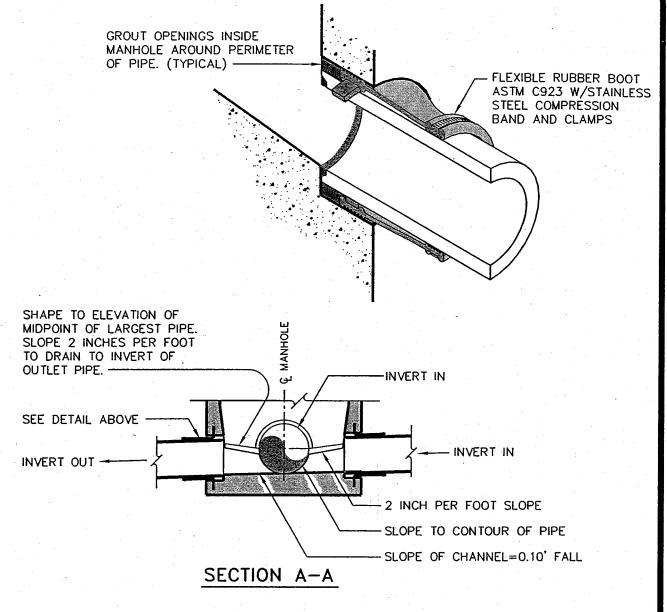
SCALE: NOT TO SCALE

REVISION DATE:

SHEET #: 04-10-03

DETAIL #

27.03



NOTES: A

- 1. ALL SERVICE LATERALS INTO MANHOLE TO BE CORE DRILLED AND BOOTED.
- 2. MAXIMUM DEPTH 4' DIAMETER MANHOLE = 20' (SEE SEWER DESIGN SECTION FOR OTHER REQUIREMENTS / LIMITATIONS).
- 3. THE INVERT SHAPING AS SHOWN SHALL CONSIST OF 3,000 PSI CONCRETE TROWELLED TO A SMOOTH SURFACE WITH NO AGGREGATE EXPOSED.
- 4. DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.
- 5. WHEN DIFFERENT DIAMETER PIPES ARE USED FROM INVERT IN TO INVERT OUT, PROVIDE A SMOOTH TRANSITION THROUGH THE INVERT.
- 6. FLAT TOP MANHOLE MAY BE USED FOR SHALLOW INSTALLATIONS AS APPROVED BY CITY ENGINEER.



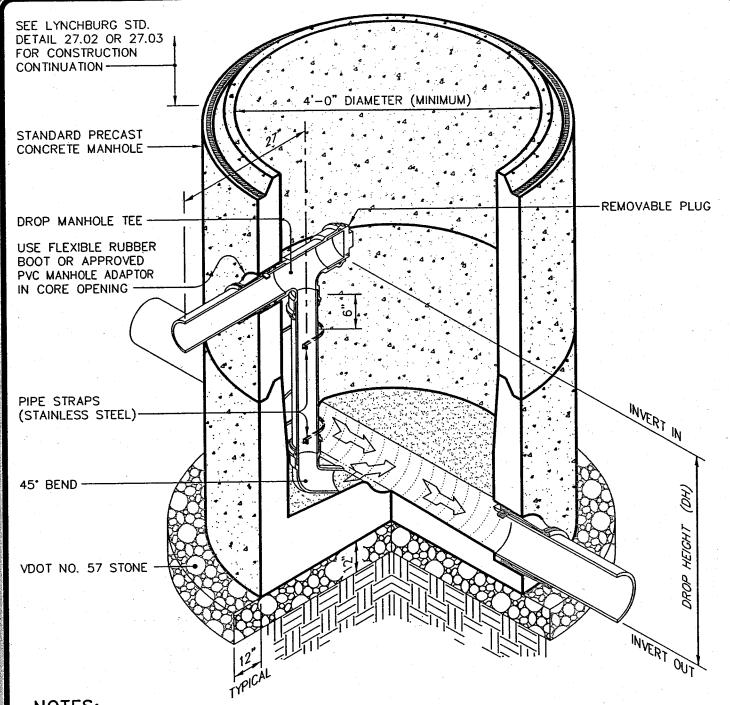
THE CITY OF LYNCHBURG

STANDARD 4' DIA. PRECAST FLAT TOP MANHOLE SCALE: NOT TO SCALE DETAIL # 27.03

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

REVISION DATE:

SHEET #:



- 1. ALL THRU PIPE SHALL BE FITTED WITH SCH. 40 PVC REMOVABLE PLUG.
- 2. ALL PLUGS SHALL BE SECURED TO THE DROP FITTING WITH 2 FEET OF GALVANIZED CHAIN SECURED WITH TWO STEEL MACHINE SCREWS, NUTS, AND WASHERS.
- 3. DROP STACK TO BE SCH. 40 PVC PIPE.
- 4. DROP STACK WILL BE STRAPPED TO MANHOLE AT PIPE JOINTS. STRAPS AND FASTENERS TO BE MADE OF STAINLESS STEEL.
- 5. ELBOW AT BOTTOM OF THE STACK WILL BE A 45° BEND POSITIONED IN THE DIRECTION OF THE FLOW WITH BENCH CONSTRUCTED TO CONFORM TO MANHOLE BENCH.



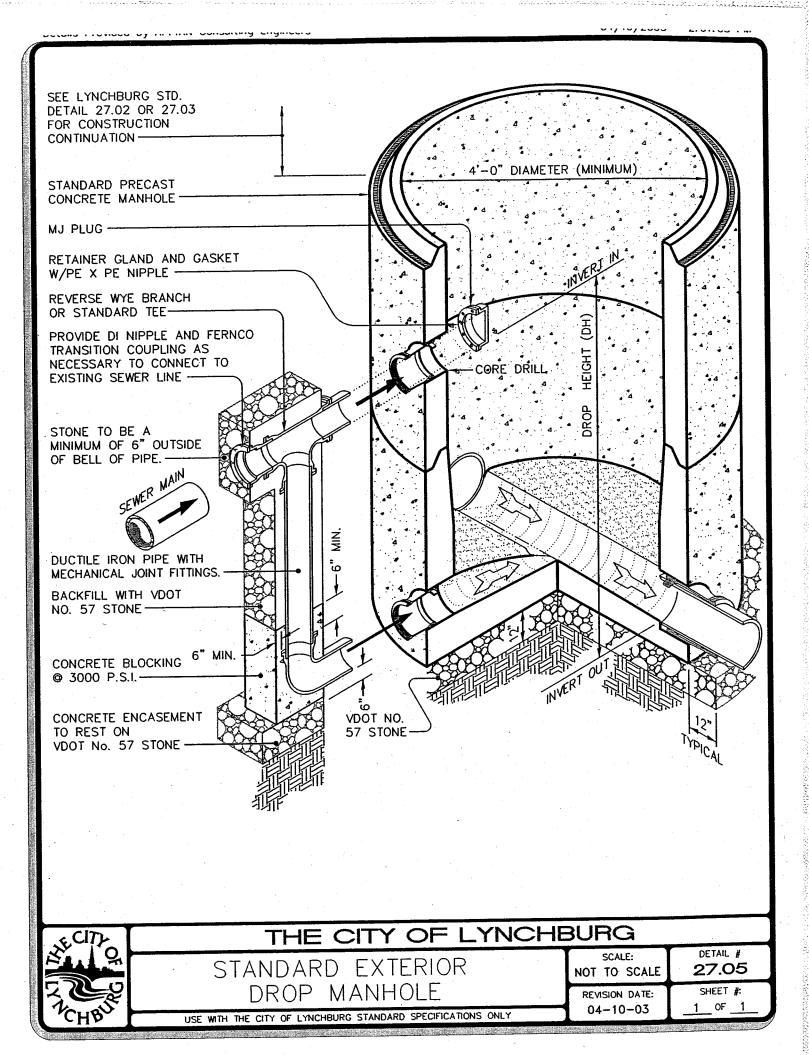
THE CITY OF LYNCHBURG

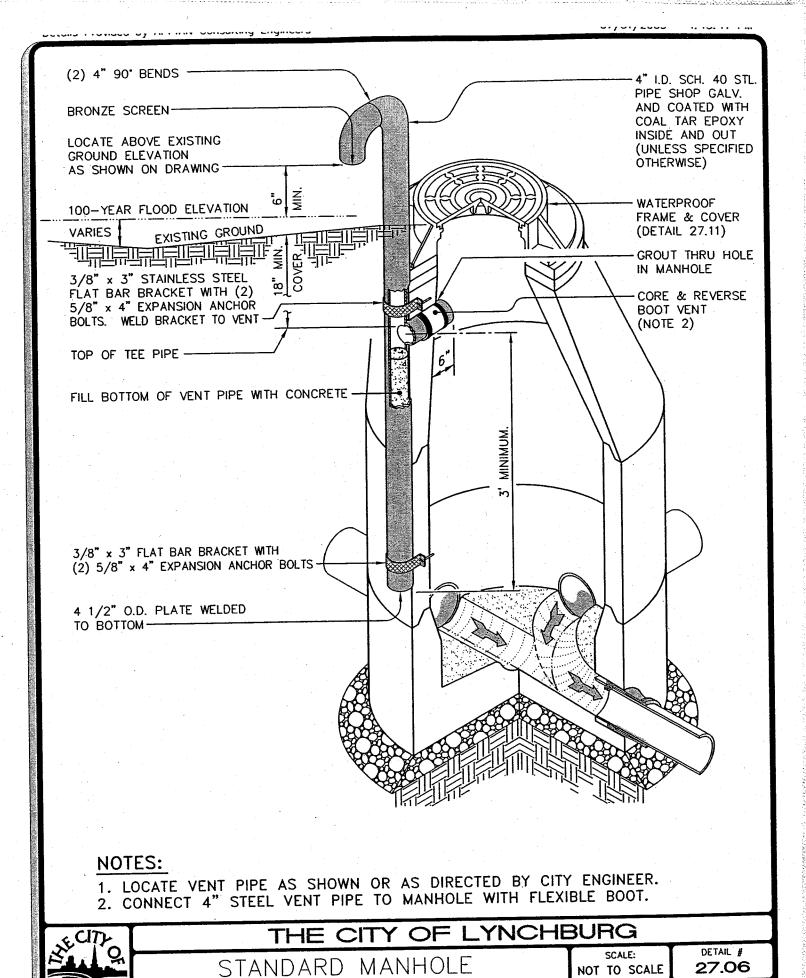
STANDARD INTERIOR DROP MANHOLE

SCALE: NOT TO SCALE DETAIL # 27.04

REVISION DATE: 04-10-03

SHEET #:





VENTING PIPE DETAIL

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

NOT TO SCALE

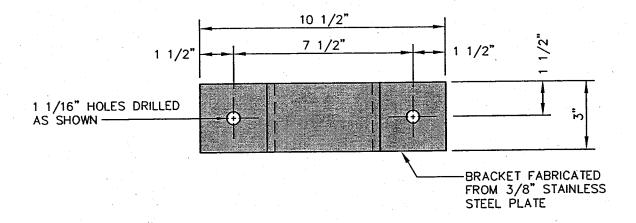
REVISION DATE:

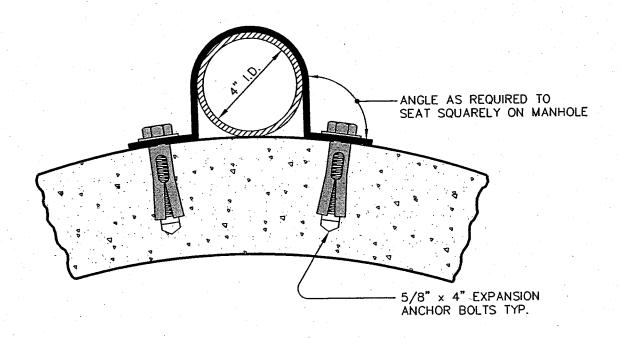
04 - 10 - 03

27.06

SHEET #:

1 OF







THE CITY OF LYNCHBURG

STANDARD MANHOLE VENTING PIPE DETAIL

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE: NOT TO SCALE DETAIL # 27.06

REVISION DATE: 04-10-03

SHEET #:
2 OF 2

8"x8"x16" SOLID CONCRETE BLOCK CENTER W/RISER WALL (4 EACH)—

EXISTING SANITARY-SEWER PIPE

SEE SPECS FOR FOUNDATION IMPROVEMENT WHEN NEEDED ---

-MIN. 8" CLEAR
BETWEEN EXISTING
PIPE AND PROPOSED
STONE

12" THICK VDOT No. 57 STONE

BASE ISOMETRIC VIEW

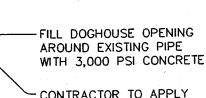
SET DOGHOUSE BASE ON CONCRETE BLOCKS

DOGHOUSE OPENING SHALL
BE PREFORMED BY
MANUFACTURER OR
SAW CUT TO FIT PIPE
OUTSIDE DIAMATER
PLUS 6".

SEE PLANS FOR PROPOSED INVERT(S) LOCATION & ELEVATION

RISER ISOMETRIC VIEW

ALLOW CONCRETE
TO FLOW A MIN.
1'-0" BEYOND BASE
OF STRUCTURE



CONTRACTOR TO APPLY WATER PROOFING SEALANT AT JOINT (TYP.)

-8" MIN. CAST-IN PLACE 3,000 PSI CONCRETE BASE

FOUNDATION SECTION VIEW



THE CITY OF LYNCHBURG

PRECAST CONCRETE DOGHOUSE MANHOLE

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE: NOT TO SCALE DETAIL # 27.07

REVISION DATE: 04-10-03

SHEET #:

ALL JOINTS TO BE T & G W/ PREFORMED BUTYL RUBBER (MASTIC) OR O-RING GASKET SEE LYNCHBURG STD. DETAIL 27.02 OR 27.03 FOR CONSTRUCTION CONTINUATION -CUT AND REMOVE TOP HALF OF PIPE AFTER INVERT AND SHELF HAVE BEEN FORMED FORMED INVERT TO ALLOW FLOW TO EXISTING PIPE

INVERT SECTION VIEW

NOTES:

- 1. ALL SERVICE LATERALS INTO MANHOLE TO BE CORE DRILLED AND BOOTED.
 2. MAXIMUM DEPTH 4' DIA. MANHOLE = 20' (SEE SPECIFICATIONS).



PRECAST CONCRETE

DOGHOUSE MANHOLE

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

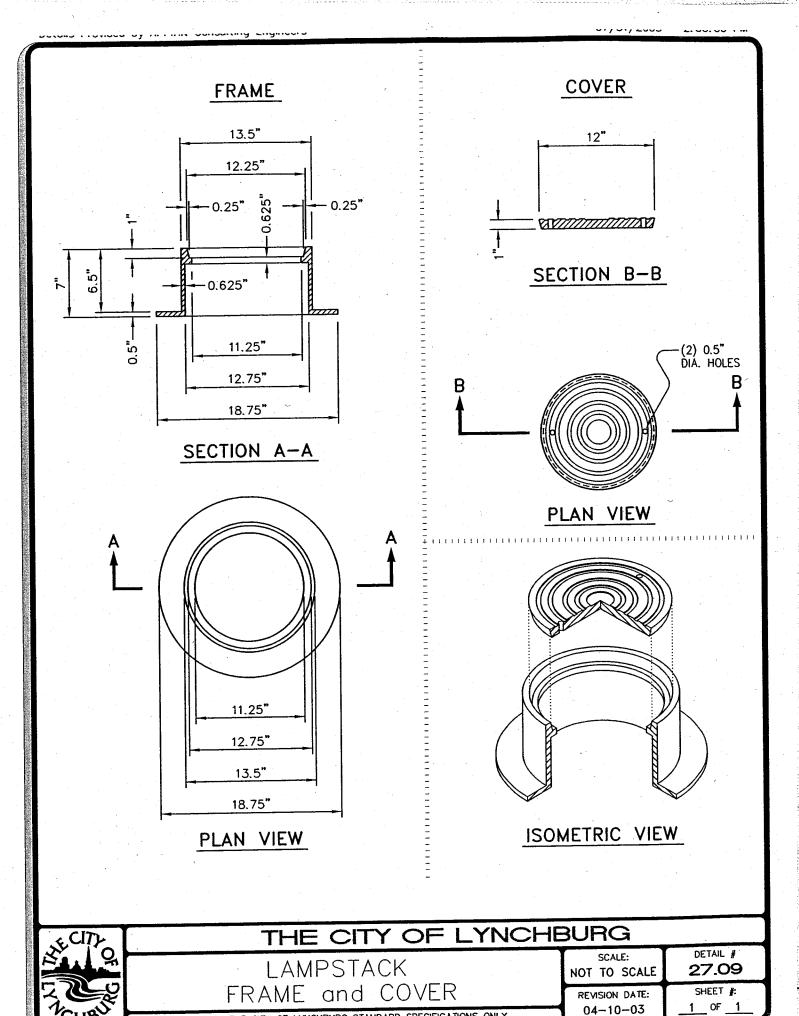
SCALE: NOT TO SCALE

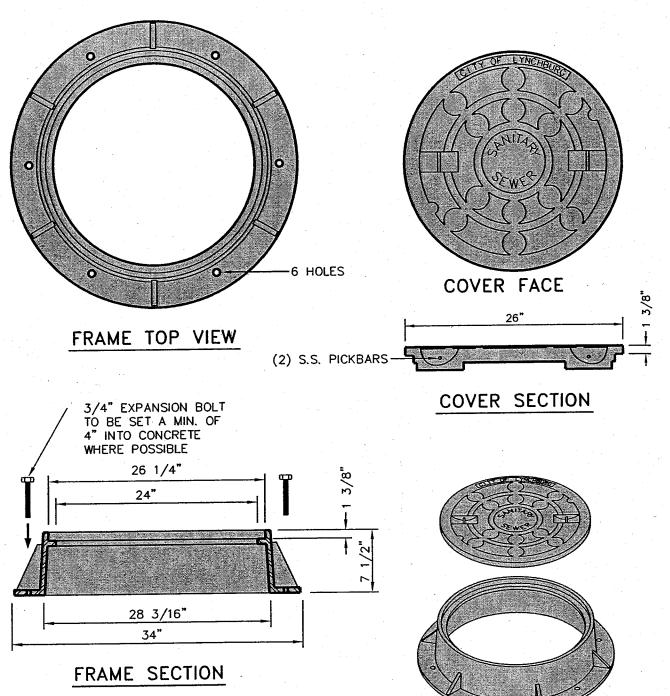
Y OF LYNCHBURG

27.07 SHEET #: REVISION DATE:

04-10-03

DETAIL #





ISOMETRIC

NOTES:

- US FOUNDRY 710 RING AND DP COVER, EAST JORDAN IRON WORKS 1. PARTS #'s: OR APPROVED EQUAL.
- 2. MANHOLE FRAMES AND COVERS SHALL BE ROADWAY TYPE WITH DEEP SOCKET MACHINE FRAMES AND COVERS TO PREVENT RATTLING. CASTINGS SHALL BE GRAY IRON MEETING REQUIREMENTS OF ASTM A48, CLASS 30.



Y OF LYNCHBURG

STANDARD MANHOLE FRAME and COVER

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

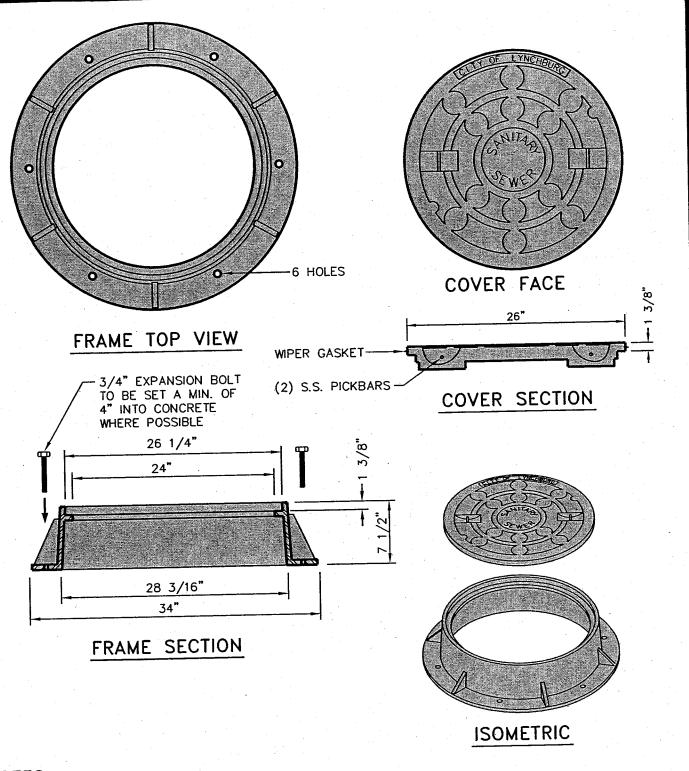
SCALE: NOT TO SCALE REVISION DATE:

SHEET #:

8-22-2003

DETAIL #

27.10



US FOUNDRY 710 RING AN DP-SSG COVER, EAST JORDAN IRON 1. PARTS #'s: WORKS 2027 FRAME AND COVER WITH WIPER GASKET, OR APPROVED EQUAL.

2. MANHOLE FRAMES AND COVERS SHALL BE ROADWAY TYPE WITH DEEP SOCKET MACHINE FRAMES AND COVERS TO PREVENT RATTLING. CASTINGS SHALL BE GRAY IRON MEETING REQUIREMENTS OF ASTM A48, CLASS 30.



THE CITY OF LYNCHBURG

STANDARD WATERPROOF MANHOLE FRAME and COVER

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

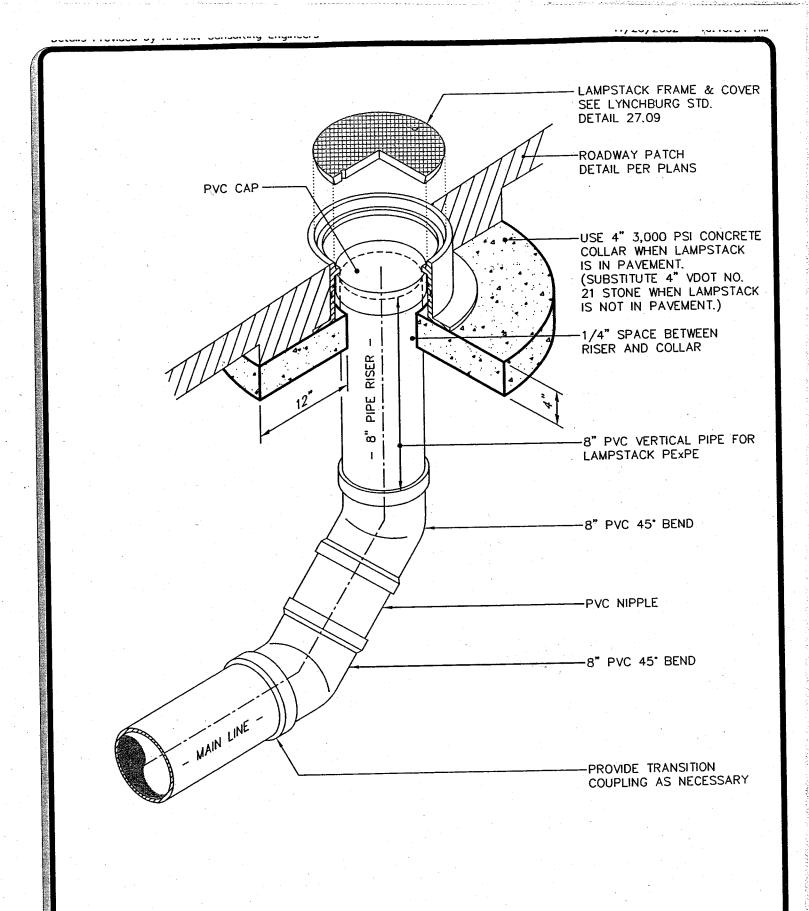
SCALE: NOT TO SCALE

REVISION DATE: 8-22-2003

SHEET #:

DETAIL #

27.11





THE CITY OF LYNCHBURG

STANDARD LAMPSTACK

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

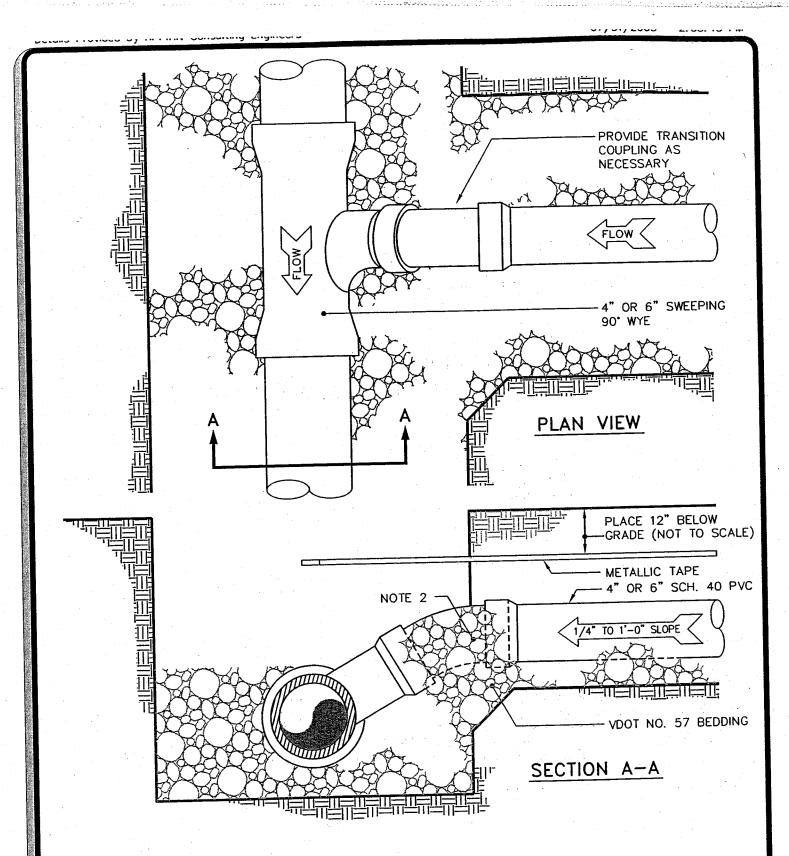
SCALE:

27.13 NOT TO SCALE

REVISION DATE: 04-10-03

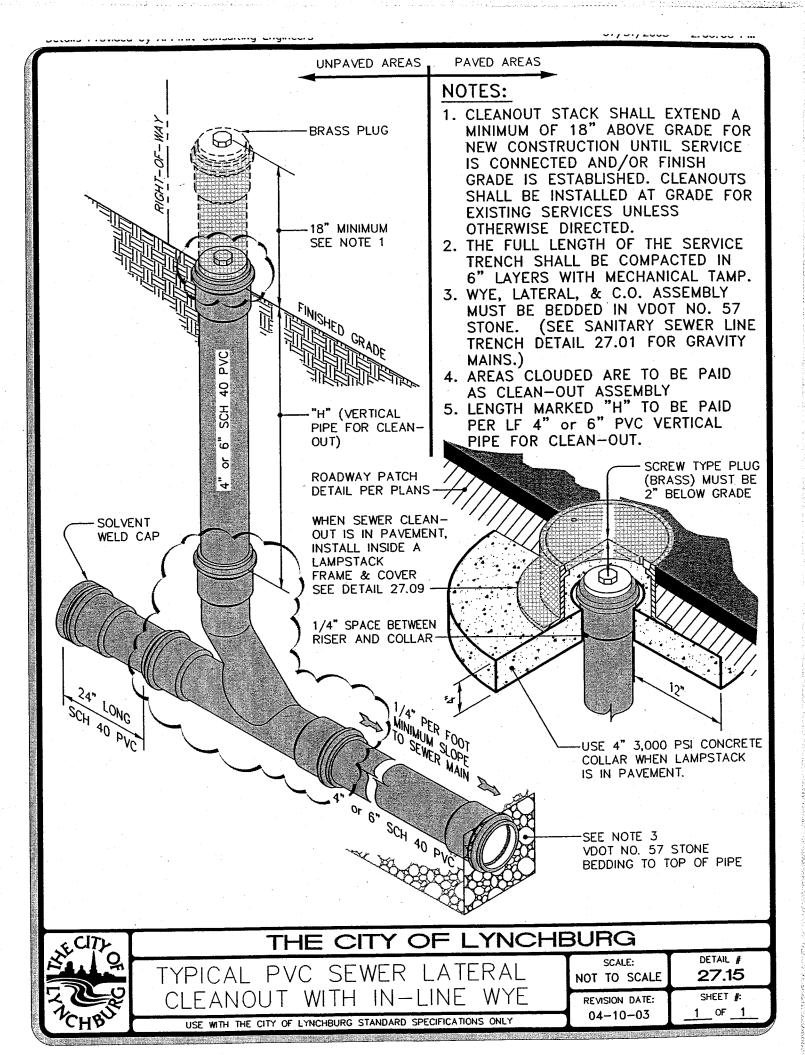
SHEET #: 1 OF

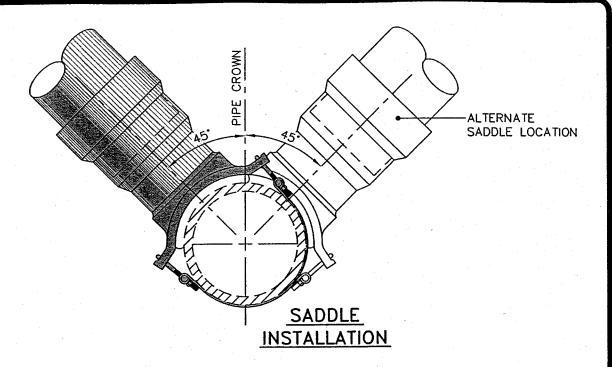
DETAIL #

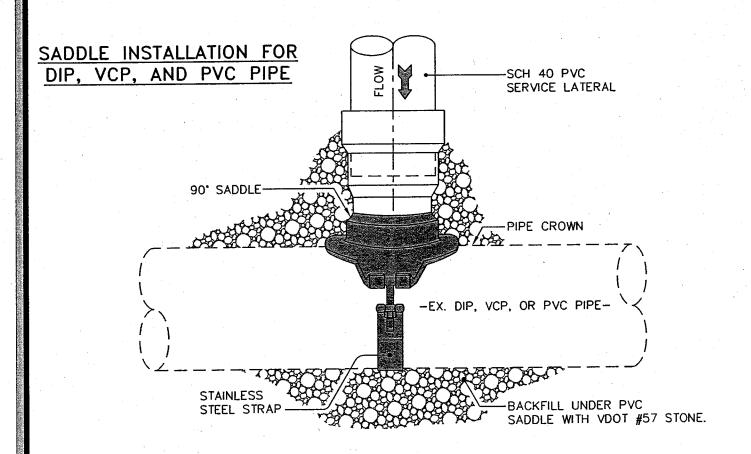


1. STONE SHALL BE INSTALLED TO TOP OF PIPE FOR PVC PIPE. STONE SHALL BE INSTALLED TO D/8 FOR DI PIPE.

CITL	THE CITY OF LYNCHE	BUHG	
NECITY OF	BUILDING CONNECTION	SCALE: NOT TO SCALE	DETAIL # 27.14
7 20	HORIZONTAL WYE	REVISION DATE: 04-10-03	SHEET #:
(CHB)	USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	07 10 00	









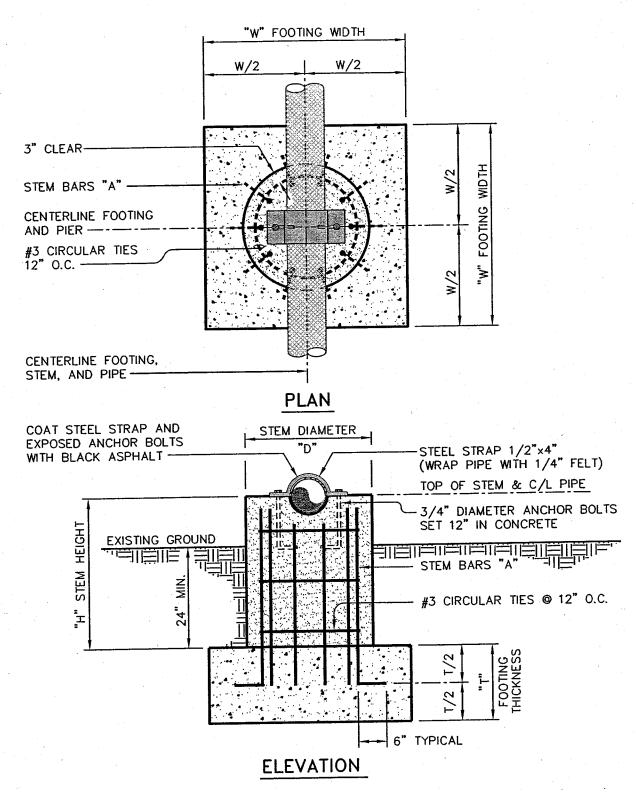
THE CITY OF LYNCHBURG

TYPICAL LATERAL SADDLE DETAIL SCALE: NOT TO SCALE DETAIL # 27.16

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

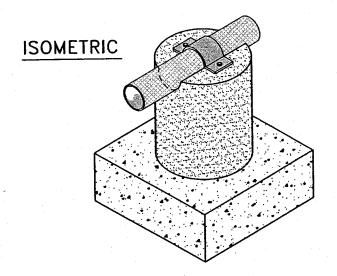
REVISION DATE: 04-10-03

SHEET #: 1_ OF _1_



1. AN ALTERNATE DESIGN MAY BE SUBMITTED FOR REVIEW BY THE CITY ENGINEER.





	PIPE S	SUPPOR	T PIER	FOR	DRY L	AND C	ROSSIN	G)
PIPE DIAMETER	STEM DIAMETER "D"	STEM HEIGHT "H"	STEM REINF. BARS "A"	FOO Si	TING ZE	STEM CONC. VOL. / VERT. FT. CU. YARDS	STEM STEEL WT./ VERT. FT. POUNDS	FOOTING CONC. VOL. CU. YARDS
			10 "4	"w"	"T"	0.18	<i>≥</i> 6,68	0.89
8" TO 10"	2-6"	1'-3" 4'-6' 7'-9' 10'-12'	10#4 10#5 10#5 10#6	4'-0" 5'-0" 6'-0" 7'-0"	1'-6" 2'-0" 2'-0" 2'-6"	0.16	10.43 10.43 15.02	1.85 2.67 4.54
12" TO 16"	3'-0"	1'-3' 4'-6' 7'-9' 10'-12'	10#4 10#5 10#6 10#8	5'-0" 6'-0" 7'-0" 8'-0"	1'-6" 2'-0" 2'-6" 2'-6"	0.26	6.68 10.43 15.02 26.70	1.39 2.67 4.54 5.92
18" TO 24"	3'-6"	1'-3' 4'-6' 7'-9' 10'-12'	14#5 14#6 14#6 14#8	6'-0" 7'-0" 8'-0" 9'-0"	2'-0" 2'-6" 3'-0" 3'-0"	0.36	14.60 21.03 21.03 37.38	2.67 4.54 7.11 9.00

- 1. MINIMUM SOIL BEARING CAPACITY REQUIRED = 3,000 PSF. ENGINEER SHALL INSPECT ALL FOOTINGS PRIOR TO PLACEMENT OF CONCRETE.
- CONCRETE 3,000 PSI ⊕ 28 DAYS.
 REINFORCING ASTM A615, GRADE 60.



THE CITY OF LYNCHBURG

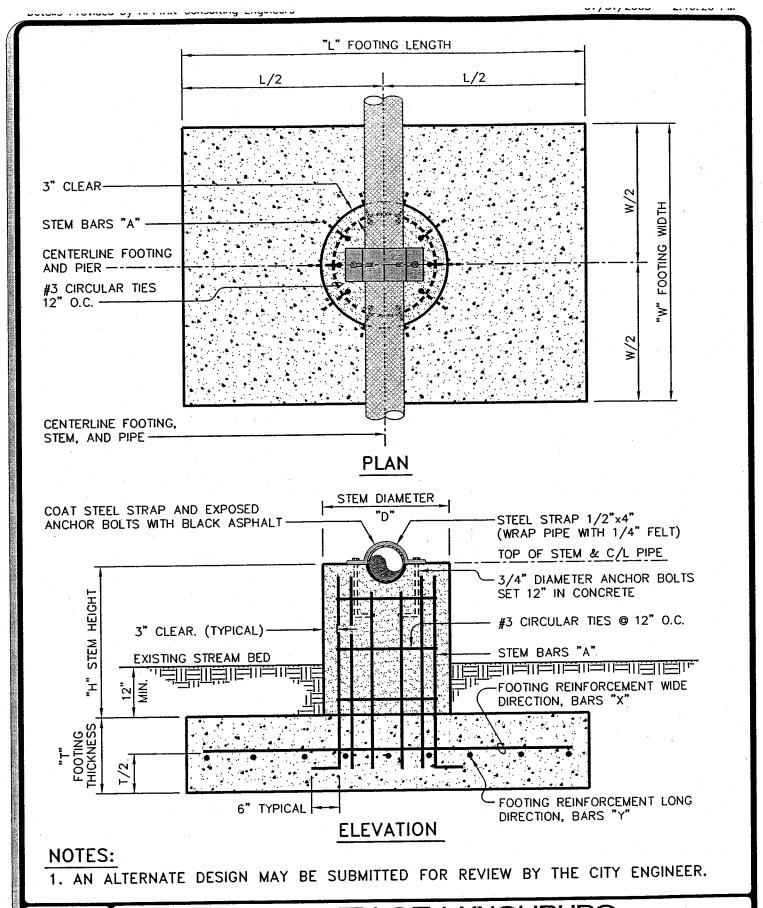
PIPE SUPPORT PIER FOR DRY LAND CROSSING

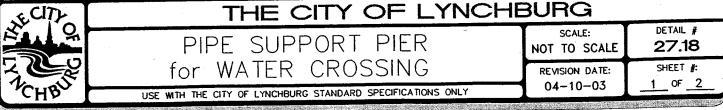
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

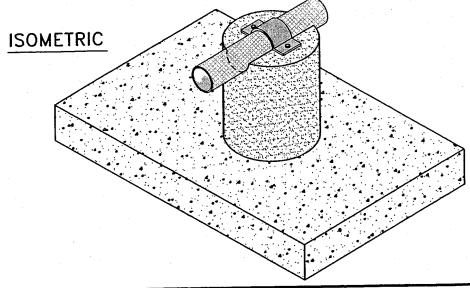
SCALE: NOT TO SCALE

27.17 SHEET #: REVISION DATE:

DETAIL #







		Р	IPE SU	PPOR	T PIE	R FO	R WAT	ER CR	OSSIN	G		
PIPE DIAMETER	STEM DIAMETER "D"	STEM HEIGHT "H"	STEM REINF. BARS "A"		FOOTING SIZE		FOOTING REINF. BARS "X" (L)	FOOTING REINF, BARS "Y" (W)	STEM CONC. VOL. / VERT. FT. CU. YARDS	STEM STEEL WT./ VERT. FT. LBS.	FOOTING CONC. VOL. CU. YARDS	FOOTING STEEL WT./ VERT, FT. LBS.
				"L"	"T"	"W"	8		<u> </u>			
8" TO 10"	2-6"	1'-3" 4'-6' 7'-9' 10'-12'	10#4 10#5 10#5 10#6	8'-0" 10'-0" 11'-0" 12'-0"	2'-0" 2'-6" 2'-8" 3'-0"	5'-6' 5'-0" 6'-0" 7'-0"	6#5 6#5 7#6 8#6	9#4 11#4 12#5 13#5	0.18	9.04 12.79 12.79 17.38	3.26 4.63 6.52 9.33	77.0 92.5 179.2 226.3
12" TO 16"	3'-0"	1'-3' 4'-6' 7'-9' 10'-12'	10#4 10#5 10#6 10#8	10'-0" 12'-0" 13'-0" 14'-0"	2'-6" 2'-8" 3'-0" 3'-0"	5'-0" 5'-0" 6'-0" 6'-0"	6#5 6#6 7#7 7#8	11#4 13#5 14#5 15#6	0.26	9.63 13.38 17.97 26.65	4.63 5.92 8.67 9.33	92.5 164.6 259.2 376.2
18" TO 20"	3'-6"	1'-3' 4'-6' 7'-9' 10'-12'	14#5 14#6 14#6 14#8	11'-0" 12'-0" 14'-0" 15'-0"	2'-6" 3'-0" 3'-0" 3'-6"	5'-0" 6'-0" 6'-0" 6'-0"	6#5 7#6 7#7 7#8	12#5 13#5 15#6 16#6	0.36	18.14 24.57 24.57 40.92	5.09 8.00 9.33 11.67	122.0 195.5 317.1 403.2
24"	3'-6"	1'-3' 4'-6' 7'-9' 10'-12'	14#5 14#6 14#6 14#8	11'-0" 13'-0" 14'-0" 15'-0"	2'-6" 3'-0" 3'-4" 4'-0"	6'-0" 6'-0" 7'-0" 7'-0"	7#5 7#6 8#7 8#8	12#5 14#6 15#6 16#6	0.36	18.14 24.57 24.57 40.92	6.11 8.67 12.10 15.56	145.5 247.1 367.2 465.9

- 1. MINIMUM SOIL BEARING CAPACITY REQUIRED = 3,000 PSF. ENGINEER SHALL INSPECT ALL FOOTINGS PRIOR TO PLACEMENT OF CONCRETE.
- CONCRETE − 3,000 PSI @ 28 DAYS.
- 3. REINFORCING ATSM A615, GRADE 60.
- 4. FOOTING TO BE PLACED SO THAT SIDE IS PARALLEL TO DIRECTION OF STREAM FLOW AT FLOOD STAGE.
- 5. IF FOOTING IS PLACED DIRECTLY ON SOLID ROCK, 1" DIA. DOWELS TO BE PLACED IN ROCK TO CONNECT FOOTING TO ROCK AND PREVENT SLIDING. DOWELS TO BE PLACED ON 24" CENTERS IN EACH DIRECTION.
- 6. SUPPORT SIZE BASED ON 15 FPS STREAM FLOW WITH EMPTY (BUOYANT) PIPE.
- 7. FOR VELOCITIES >15 FPS, PIERS SHALL BE DESIGNED BY LICENSED PROFESSIONAL ENGINEER.



THE CITY OF LYNCHBURG SCALE:

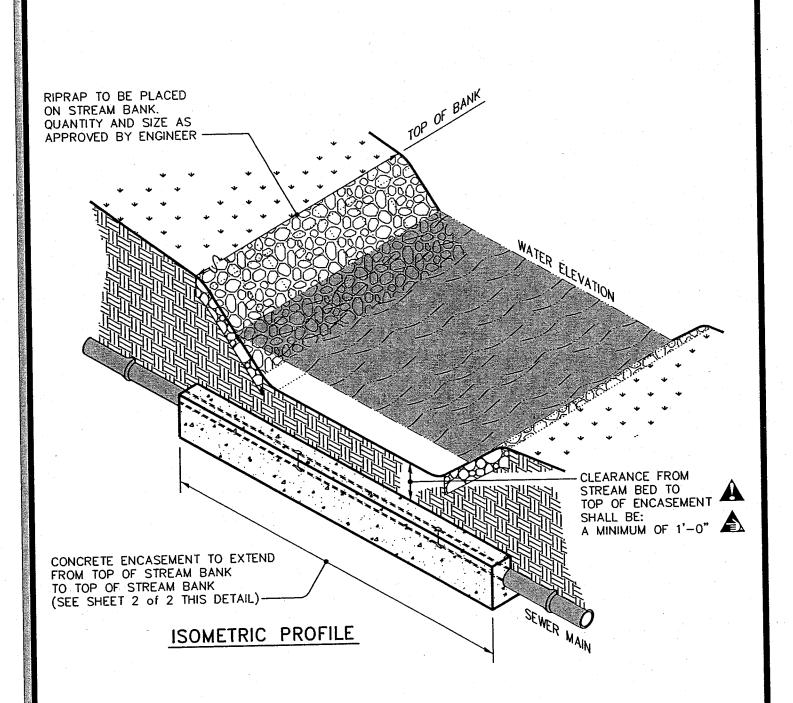
PIPE SUPPORT PIER FOR WATER CROSSING

REVISION DATE: 04-10-03

NOT TO SCALE

27.18 SHEET #:

DETAIL #

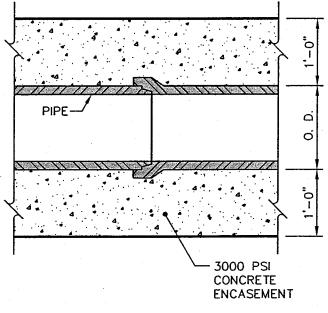


- 1. CONCRETE TO BE 3,000 PSI.
- 2. ENCASEMENT TO BE USED ONLY WHERE SPECIFIED ON PLANS.
- 3. PIPE SHALL BE DUCTILE IRON PIPE.
- 4. FILTER FABRIC TO BE PLACED UNDER RIP-RAP AND KEYED INTO EMBANKMENT.

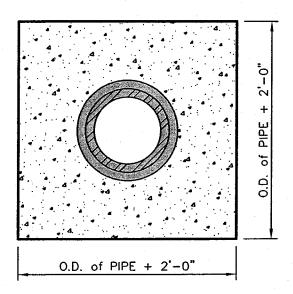


SEWER LINE CROSSING BENEATH STREAM BED

Y OF LYNCHE	BURG	
ROSSING	SCALE: NOT TO SCALE	DETAIL # 27.19
EAM BED	REVISION DATE:	SHEET #: 1 OF 2



LONGITUDINAL SECTION



TRANSVERSE SECTION

NOTES:

1. ENCASEMENT TO BE USED ONLY WHERE SPECIFIED ON PLANS.



THE CITY OF LYNCHBURG

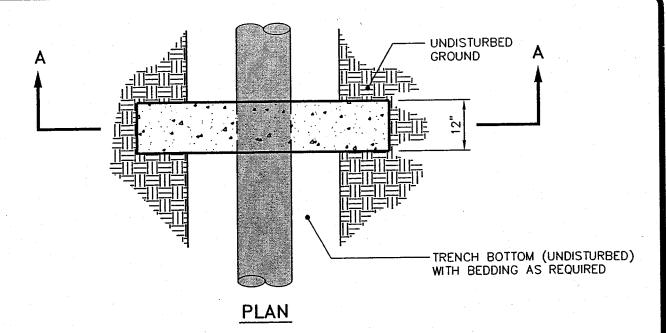
SEWER LINE CROSSING BENEATH STREAM BED SCALE: NOT TO SCALE DETAIL # 27.19

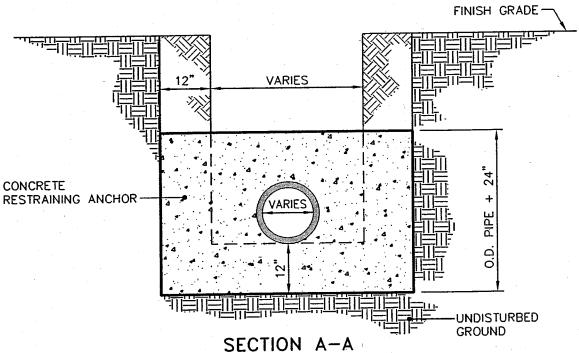
REVISION DATE: 04-10-03

SHEET #:

2 OF 2







- 1. SPACING FOR CONCRETE RESTRAINING ANCHORS SHALL BE AS SHOWN ON THE PLANS.
- 2. THE PORTION OF THE ANCHOR IN UNDISTURBED GROUND SHALL BE POURED UNFORMED.
- 3. CONCRETE SHALL BE 3000 PSI.
- 4. CONCRETE ANCHOR TO BE POURED AROUND BELL OF PIPE WHERE APPLICABLE.
- 5. USE ON SLOPES EQUAL TO OR GREATER THAN 20%.
- 6. PIPE SHALL BE DUCTILE IRON PIPE.

Y OF LYNCHBURG SCALE:

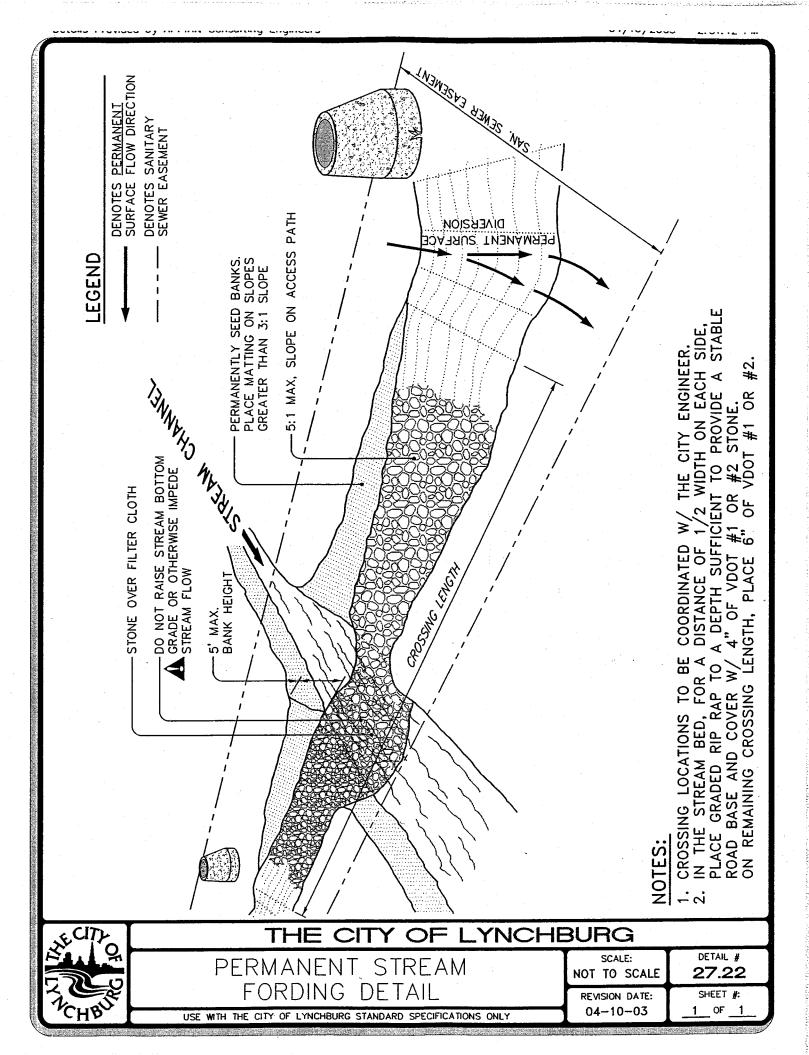
CONCRETE RESTRAINING **ANCHOR**

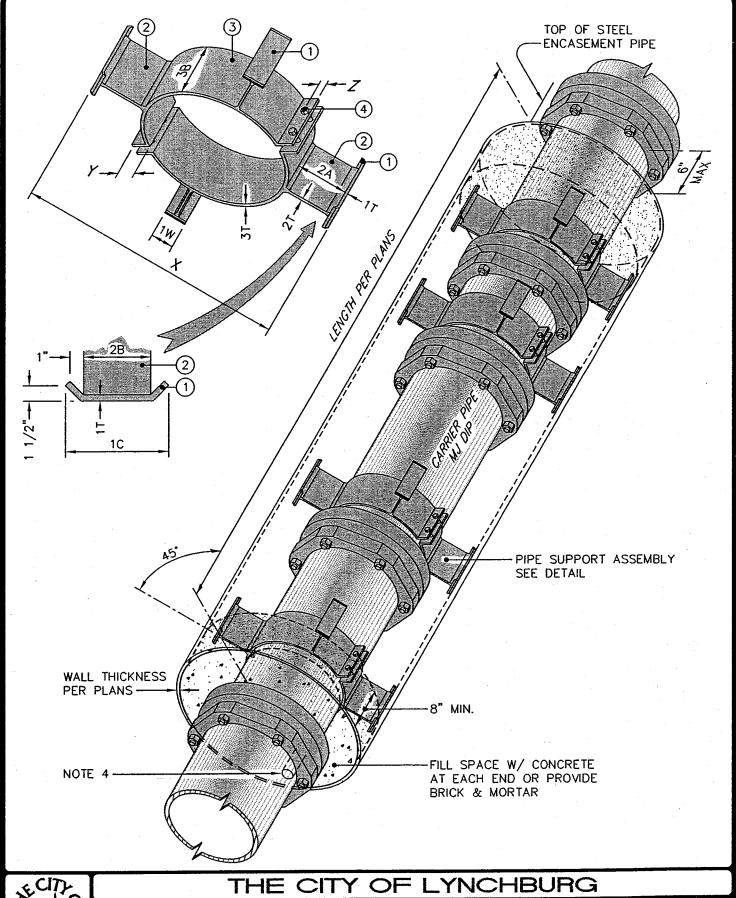
REVISION DATE:

NOT TO SCALE SHEET #: 04-10-03

DETAIL #

27.21







STEEL ENCASEMENT DETAIL

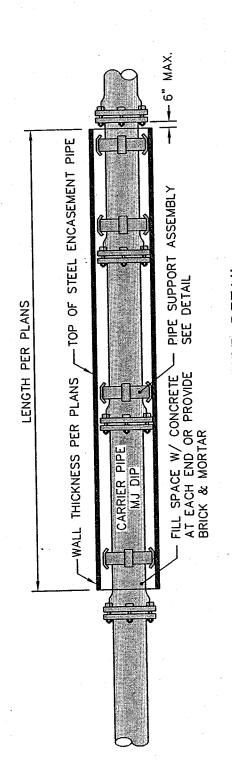
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE: NOT TO SCALE

DETAIL # 27.23

REVISION DATE: 04-10-03

SHEET #:



ENCASEMENT PIPE DETAIL

CARRIER PIPE	BIPE		CASING PIPE	PPE	> \			٦	冒	SUPPORT	ASSE	MBLY	MARK	PIPE SUPPORT ASSEMBLY MARK NUMBER			DIMENSIONS	NS .
		KAIL	KAILKOAU (*) HIGHWA!	計	XX.					0		1	6					
MOMINIA		1) —	, (Э			3			9	4	-	×	> -	7
DIA.	0.D.	 0.0	O.D. WALL O.D. WALL	 	-	ပ	≥	-	8	4	-	œ						
	.06.9	12"	.251" 1	2	.188"	2,		3/8"	3,	1.	3/8"	3"	3/8"	1/2" DIA. 1 REO'D		10.40" 1 7/8"	1 7/8"	3/4"
5 0			280"	'u	188"	<u>"</u> 9	1,0	3/8"	:4	1 3/4"	3/8"	3,	3/8"	1/2" DIA. 1 REO'D		14.05"	1 7/8"	3/4"
٥	3.00		407" 24"	7 2	188"	+-	+-	3/8"	.4	4 3/4"	3/8"		3/8"	1/2" DIA. 1 REQ'D		22.10"	3"	1 3/8"
2		F 7) }	: '	3 6	;		"0,	:	" 2 2 //"	"6/ 2	•	1 / B.	1/2" DIA 1 RFO'D		22.20"		1 3/8"
12"	13.20"	24"	.407.	.4.		٥	7	0/0		1/0 0	2)		3	1/4 010	1	2		
14"	_	24"	407" 24"	.4	.250"	.9	2"	3/8"	.4	2 3/4" 3/8"	3/8"	.4	3/8"	1/2" DIA. 1 REQ'D	1 REQ'D	22.30"	3"	1 3/8
			469"		250"	å	F.	3/8"	9	4 1/4"	3/8"	.9	3/8"	3/4" DIA. 1 REQ'D	1 REQ'D	27.40"	3,	1 3/8"
2	2		5	3	222			, ;	1	1,7	1 /0"	-		0,010 1 VIO "1/ 2	1 050	27 50"	, *	1 3/8"
18,	19.50"	30	.469".	30	.250	œ	3	3/8	9	3 1/4 3/8	۵/۶	٥	0/0	3/4 DIA	ר ארע ה	2,2	,)
., 70	25 RO"	45"	563"	42"	.312"	12"	.4	1/2"	10.	5 3/4" 1/2"	1/2"	10.	1/2"	1/2" DIA. 2 REO'D	2 REO'D	39.30"		1 3/8"
17	20.02		, 56 Z"	1 2	310"	12"	.4	1/2"	10.	1/2" 10" 2 1/2" 1/2" 10"	1/2"	10.		1/2" 1/2" DIA. 2 REQ'D	2 REQ'D	39.00"	3,	1 3/8"
ر م	32.00	747		7 +	1,1	-	-											

* DIMENSIONS ARE WITHOUT COATINGS

NOTES:

REQUIRED FOR EASE OF INSTALLATION. JACKING. GREASE ENCASEMENT PIPE AS

PROVIDE A 2" DRAIN PIPE FROM CASING PIPE AT DOWNSTREAM INVERT OF CASING PIPE. STEEL PIPE TO BE 35,000 PSI MIN. YIELD STRENGTH. INSTALLATION BY DRY BORE &

DRAIN TO DAYLIGHT OR FRENCH DRAIN.

SCALE: DETAIL # 27.23

REVISION DATE: SHEET #: 04-10-03 ____ OF ___2

THE CITY OF LYNCHBURG

STEEL ENCASEMENT DETAIL

PERMITS AND REGULATORY NOTICES

tionwide Permit (12) Utility Line Activities (3/18/2002)

Activities required for the construction, maintenance, and repair of utility lines and associated facilities in waters of the United States as follows:

- of the United States, provided the material is not placed in such a manner that it trench excavation may be temporarily sidecast (up to three months) into waters utility line is installed. Any exposed slopes and stream banks must be stabilized outfall and intake structures and the associated excavation, backfill, or bedding substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio Utility lines: The construction, maintenance, or repair of utility lines, including is dispersed by currents or other forces. The District Engineer may extend the example, utility line trenches can be backfilled with clay blocks to ensure that appropriate. In wetlands, the top 6" to 12" of the trench should normally be the trench does not drain the waters of the United States through which the change in preconstruction contours. A "utility line" is defined as any pipe or mmediately upon completion of the utility line crossing of each waterbody. and television communication (see Note 1, below). Material resulting from backfilled with topsoil from the trench. Furthermore, the trench cannot be backfilling with extensive gravel layers, creating a french drain effect). For constructed in such a manner as to drain waters of the United States (e.g., for the utility lines, in all waters of the United States, provided there is no pipeline for the transportation of any gaseous, liquid, liquefiable, or slurry period of temporary side casting not to exceed a total of 180 days, where \equiv
- (ii) <u>Utility line substations</u>: The construction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters, provided the activity does not result in the loss of greater than 1/2 acre of non-tidal waters of the United States.
- (iii) Foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.
- (iv) <u>Access roads</u>: The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters, provided the discharge does not cause the loss of greater than 1/3 acre of non-tidal waters of the United States. Access roads shall be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes the adverse effects on waters of the United States and as near as possible to preconstruction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above preconstruction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

The term "utility line" does not include activities which drain a water of the United States, such as drainage tile or french drains; however, it does apply to pipes conveying drainage from another area. For the purposes of this NWP, the loss of waters of the United States includes the filled area plus waters of the United States that are adversely affected by flooding, excavation, or drainage as a result of the project. Activities authorized by paragraphs (i) through (iv) may

not exceed a total of 1/2 acre loss of waters of the United States. Waters of the United States temporarily affected by filling, flooding, excavation, or drainage, where the project area is restored to preconstruction contours and elevations, are not included in the calculation of permanent loss of waters of the United States. This includes temporary construction mats (e.g., timber, steel, geotextiie) used during construction and removed upon completion of the work. Where certain functions and values of waters of the United States are permanently adversely affected, such as the conversion of a forested wetland to a herbaceous wetland in the permanently maintained utility line right-of-way, mitigation will be required to reduce the adverse effects of the project to the minimal level.

Mechanized landclearing necessary for the construction, maintenance, or repair of utility lines and the construction, maintenance, and expansion of utility line substations, foundations for overhead utility lines, and access roads is authorized, provided the cleared area is kept to the minimum necessary and preconstruction contours are maintained as near as possible. The area of waters of the United States that is filled, excavated, or flooded must be limited to the minimum necessary to construct the utility line, substations, foundations, and access roads. Excess material must be removed to upland areas immediately upon completion of construction. This NWP may authorize utility lines in or affecting navigable waters of the United States, even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322).

Notification: The permittee must notify the District Engineer in accordance with General Condition 13, if any of the following criteria are met:

- (a) Mechanized land clearing in a forested wetland for the utility line rightof-way;
 - (b) A Section 10 permit is required;
- (c) The utility line in waters of the United States, excluding overhead lines, exceeds 500 feet;
 - (d) The utility line is placed within a jurisdictional area (i.e., a water of the United States), and it runs parallel to a stream bed that is within that jurisdictional area;
- (e) Discharges associated with the construction of utility line substations that result in the loss of greater than 5,000 square feet of waters of the United States;
 - (f) Permanent access roads constructed above grade in waters of the United States for a distance of more than 500 feet. Norfolk District Regional Condition: Permanent and temporary access roads affecting special aquatic sites, including wetlands; or
- (g) Permanent access roads constructed in waters of the United States with impervious materials. (Sections 10 and 404)

Note 1: Overhead utility lines constructed over Section 10 waters and utility lines that are routed in or under Section 10 waters without a discharge of dredged or fill material require a Section 10 permit; except for pipes or pipelines used to transport gaseous, liquid, liquefiable, or slurry substances over navigable waters of the United States, which are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material associated with such pipelines will require a Corps permit under Section 404.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work and the area restored to preconstruction contours,

elevations, and wetland conditions. Temporary access roads for construction may be authorized by NWP 33.

waters of the United States (i.e., Section 10 waters), copies of the PCN and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Note 3: Where the proposed utility line is constructed or installed in navigable Administration, National Ocean Service, for charting the utility line to protect navigation.

REGIONAL CONDITIONS:

- Whenever possible, excavated material shall be placed on an upland site. However, when this is not feasible, temporary stockpiling is hereby authorized provided that:
- All excavated material stockpiled in a vegetated wetland is placed on filter cloth, mats, or some other semi-permeable surface. The material will be stabilized with straw bales, filter cloth, etc. to prevent reentry into the waterway.
- District Engineer or his authorized representatives if the material is to be stockpiled longer than excess excavated material must be completely removed from the wetlands within 30 days after All excavated material must be placed back into the trench to the original contour and all the pipeline has been laid through the wetlands area. Permission must be granted by the ف
- utility activities requiring notification the permittee shall submit the following information: For
- United States within the corridor. Aquatic resource information shall be submitted using the A map of the entire utility corridor including a delineation of all wetlands and waters of the Cowardin Classification System mapping conventions (e.g. PFO, PEM, POW, etc.). 5
- i. Selection of an alignment which avoids and minimizes wetland impacts to the maximum An alternatives analysis which specifically addresses the following:
- Selection of an alignment which avoids fragmenting large tracts of forested wetlands by routing utility lines outside of forested tracts or on the edges of forested tracts.
 - Minimizing clearing of wetlands. Grubbing will be limited to the permanent easement for underground utility lines. In other area wetland vegetation shall be removed at or above the ground surface.
- For overhead utility lines, allow natural succession to restore and maintain the corridor in scrub-shrub wetlands except for a minimum corridor needed for access, to the
 - v. For buried utility lines allowing natural succession to restore the area to tree and scrub shrub except for a 15-foot wide access corridor, to the maximum extent practicable. maximum extent practicable.
- vi. Place access roads where they have the least impact to wetlands. Construct access roads
 - to the minimum width necessary.
- addition, the location and depth of the Federal Project Channel shall be shown in relation to the For all submerged utility lines across navigable waters of the United States, a location map and authorized bottom depth of Federal project channel and at least 3 feet below the bottom depth cross-sectional view showing the utility line crossing from bank to bank is required. In: proposed utility line. In general, all utility lines shall be buried at least 6 feet below the in all subaqueous areas

GENERAL CONDITIONS:

The following general conditions must be followed in order for any authorization by a NWP to be valid:

- Navigation. No activity may cause more than a minimal adverse effect on navigation.
 - Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
- Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other

- fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
- Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.
 - Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance. ŝ
- Regional and Case-By-Case Conditions. The activity must comply with any regional conditions which may have been added by the division engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the State or tribe in its Section 401 water quality certification and Coastal Zone Management Act consistency determination. છં
- River System; or in a river officially designated by Congress as a "study river" for possible inclusion activity will not adversely affect the Wild and Scenic River designation, or study status. Information in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed and Wildlife Service). ۲.
- Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not ∞i
- (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the State or tribal 401 certification limited to, reserved water rights and treaty fishing and hunting rights.

 Water Quality. (a) In certain States and tribal lands an individual 401 water quality certification must be obtained or waived (See 33 CFR 330.4(c)). 6
- vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated (either generically or individually) does not require or approve a water quality management plan, the permittee must include design criteria and techniques that will ensure that the authorized work does stormwater management that minimizes degradation of the downstream aquatic system, including adverse effect on water quality). An important component of water quality management includes water quality (refer to General Condition 21 for stormwater management requirements). Another compliance with state or local standards, where applicable, will ensure no more than minimal important component of water quality management is the establishment and maintenance of not result in more than minimal degradation of water quality (or the Corps determines that buffer requirements for the NWPs).
- Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)). Ö.
- adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the name(s) of the endangered or threatened species that may be affected by the proposed work or that the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species Act have utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS, the District Engineer may add speciesendangered or threatened species or designated critical habitat, the notification must include the been satisfied and that the activity is authorized. For activities that may affect Federally-listed designation, as identified under the Federal Endangered Species Act, or which will destroy or continued existence of a threatened or endangered species or a species proposed for such specific regional endangered species conditions to the NWPs. 11
 - (b) Authorization of an activity by a nationwide permit does not authorize the "take" of a threatened separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" Act. Information on the location of threatened and endangered species and their critical habitat can Fisheries Service or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and provisions, etc.) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species or endangered species as defined under the Federal Endangered Species Act. In the absence of be obtained directly from the offices of the U.S. Fish and Wildlife Service and National Marine http://www.nmfs.noaa.gov/prot_res/overview/es.html respectively.

- Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized. Information on the location and existence of historic resources can be obtained from the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of requirements of the National Historic Preservation Act have been satisfied and that the activity is 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be Historic Places, and shall not begin the activity until notified by the District Engineer that the affected by the proposed work or include a vicinity map indicating the location of the historic State Historic Preservation Office and the National Register of Historic Places (see 33 CFR
- request the additional information necessary to make the PCN complete only once. However, if District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the PCN is complete within 30 days of the date of receipt and can (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the the prospective permittee does not provide all of the requested information, then the District

13.

review process will not commence until all of the requested information has been received by (1) Until notified in writing by the District Engineer that the activity may proceed under the the District Engineer. The prospective permittee shall not begin the activity:

Engineer will notify the prospective permittee that the PCN is still incomplete and the PCN

- NWP with any special conditions imposed by the District or Division Engineer; or
 - (2) If notified in writing by the District or Division Engineer that an individual permit is required; or
- notification and the prospective permittee has not received written notice from the District or modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be (3) Unless 45 days have passed from the District Engineer's receipt of the complete
 - Contents of Notification: The notification must be in writing and include the following 330.5(d)(2) **a**
 - (1) Name, address, and telephone numbers of the prospective permittee; information:
 - (2) Location of the proposed project;
- or individual permit(s) used or intended to be used to authorize any part of the proposed project (3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);
 - (4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g.,
- regarding the original design capacities and configurations of those areas of the facility where (6) For NWP 14 (Linear Transportation Projects), the PCN must include a compensatory (5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information maintenance dredging or excavation is proposed.
- mitigation proposal to offset permanent losses of waters of the United States and a statement describing how temporary losses of waters of the United States will be minimized to the maximum extent practicable.
- Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, (7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and (8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee. cumulatively and must notify the project sponsor of this determination in writing. (9) For NWP 29 (Single-Family Housing), the PCN must also include:

- (ii)A statement that the single-family housing activity is for a personal residence of the (i) Any past use of this NWP by the individual permittee and/or the permittee's spouse; permittee;
- (iii)A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼ acre or less will not require a formal than 1/4 acre in size, a formal wetland delineation must be prepared in accordance with the wetlands are and the amount of wetlands that exists on the property. For parcels greater on-site delineation. However, the applicant shall provide an indication of where the current method required by the Corps. (See paragraph 13(f));
- (iv)A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and the parcel, in any form of ownership (including any land owned as a partner, corporation, sale agreement or other contract for sale or purchase has been executed;
 - (10) For NWP 31 (Maintenance of Existing Flood Control Facilties), the prospective permittee submit a five year (or less) maintenance plan. In addition, the PCN must include all of the must either notify the District Engineer with a PCN prior to each maintenance activity or
- (i) Sufficient baseline information so as to identify the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;
 - (ii) A delineation of any affected special aquatic sites, including wetlands; and,
- include a restoration plan of reasonable measures to avoid and minimize adverse effects to (11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also iii) Location of the dredged material disposal site.
- Engineer explaining how avoidance and minimization of losses of waters of the United States (12) For NWPs 39, 43, and 44, the PCN must also include a written statement to the District were achieved on the project site. aquatic resources.
- intermittent stream bed, to be authorized, the District Engineer must determine that the activity (13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to should not be required. For discharges that cause the loss of greater than 300 linear feet of an complies with the other terms and conditions of the $NW\bar{P}$, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream offset losses of waters of the US or justification explaining why compensatory mitigation impacts in writing before the permittee may proceed;.
- environmental effects are minimal both individually and cumulatively, and waive the limitation construction of new stormwater management facilities, a maintenance plan (in accordance with losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of (14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District state and local requirements, if applicable) and a compensatory mitigation proposal to offset proposal to offset losses of waters of the US. This NWP does not authorize the relocation of project complies with all terms and conditions of this NWP, and that any adverse impacts of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal Engineer waives this criterion in writing, and the District Engineer has determined that the an intermittent stream bed, to be authorized, the District Engineer must determine that the the project on the aquatic environment are minimal, both individually and cumulatively; (15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the activity complies with the other terms and conditions of the NWP, determine adverse on stream impacts in writing before the permittee may proceed;
 - (16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the adverse effects to waters of the United States, a description of measures taken to comply with United States adversely affected by the project, a description of measures taken to minimize the criteria of the NWP, and a reclamation plan (for aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining
 - (17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be

iffected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work.

affected by the proposed work or include a vicinity map indicating the location of the historic (18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be

Form of Notification: The standard individual permít application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(19) of General Condition 13. A letter containing the requisite

information may also be used.

ਉ

છ

compensatory mitigation the applicant has included in the proposal in determining whether the the District Engineer will notify the permittee and include any conditions the District Engineer sublic interest. The prospective permittee may, optionally, submit a proposed mitigation plan Engineer will determine whether the activity authorized by the NWP will result in more than conditions of the NWP and that the adverse effects on the aquatic environment are minimal, District Engineer's Decision: In reviewing the PCN for the proposed activity, the District minimal individual or cumulative adverse environmental effects or máy be contrary to the with the PCN to expedite the process and the District Engineer will consider any proposed minimal. If the District Engineer determines that the activity complies with the terms and net adverse environmental effects to the aquatic environment of the proposed work are

minimal adverse effects on the aquatic environment. If the net adverse effects of the project on determined by the District Engineer to be minimal, the District Engineer will provide a timely determine whether the conceptual or specific proposed mitigation would ensure no more than District Engineer will expeditiously review the proposed compensatory mitigation plan. The mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the Any compensatory mitigation proposal must be approved by the District Engineer prior to the aquatic environment (after consideration of the compensatory mitigation proposal) are prospective permittee elects to submit a compensatory mitigation plan with the PCN, the written response to the applicant stating that the project can proceed under the terms and District Engineer must review the plan within 45 days of receiving a complete PCN and commencing work. If the prospective permittee is required to submit a compensatory conditions of the nationwide permit.

authorization under the NWP and instruct the applicant on the procedures to seek authorization item (2) above, no work in waters of the United States will occur until the District Engineer has If the District Engineer determines that the adverse effects of the proposed work are more than minimal level. When conceptual mitigation is included, or a mitigation plan is required under aquatic environment to the minimal level; or (3) that the project is authorized under the NWP mitigation is required in order to ensure no more than minimal adverse effects on the aquatic applicant's submission of a mitigation proposal that would reduce the adverse effects on the mitigation proposal that would reduce the adverse effects on the aquatic environment to the under an individual permit; (2) that the project is authorized under the NWP subject to the environment, the activity will be authorized within the 45-day PCN period, including the minimal, then he will notify the applicant either: (1) that the project does not qualify for with specific modifications or conditions. Where the District Engineer determines that necessary conceptual or specific mitigation or a requirement that the applicant submit a approved a specific mitigation plan.

State agencies concerning the proposed activity's compliance with the terms and conditions of Agency Coordination. The District Engineer will consider any comments from Federal and the NWPs and the need for mitigation to reduce the project's adverse effects on the aquatic environment to a minimal level. <u>e</u>

For activities requiring notification to the District Engineer that result in the loss of greater than

1/2 acre of waters of the United States, the District Engineer will, upon receipt of a notification,

agencies will then have 10 calendar days from the date the material is transmitted to telephone

comments. If so contacted by an agency, the District Engineer will wait an additional 15

or fax the District Engineer notice that they intend to provide substantive, site-specific

resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious

manner), a copy to the appropriate offices of the Fish and Wildlife Service, State natural

appropriate, the National Marine Fisheries Service. With the exception of NWP 37, these

response to the resource agency, except as provided below. The District Engineer will indicate Fishery Conservation and Management Act, the District Engineer will provide a response to calendar days before making a decision on the notification. The District Engineer will fully concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens conservation recommendations. Applicants are encouraged to provide the Corps multiple National Marine Fisheries Service within 30 days of receipt of any Essential Fish Habitat consider agency comments received within the specified time frame, but will provide no in the administrative record associated with each notification that the resource agencies? copies of notifications to expedite agency notification.

Wetlands Delineations: Wetland delineations must be prepared in accordance with the current acre in size. The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start method required by the Corps. For NWP 29 see paragraph (b)(9)(iii) for parcels less than 1/4 until the wetland delineation has been completed and submitted to the Corps, where \in

appropriate.

Compliance Certification. Every permittee who has received a Nationwide permit verification from certification will include: a.) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions; b.) A statement that any required mitigation was completed in accordance with the permit conditions; and c.) The signature of the mitigation. The certification will be forwarded by the Corps with the authorization letter. The the Corps will submit a signed certification regarding the completed work and any required permittee certifying the completion of the work and mitigation. 14

stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete total project cannot exceed 1/3 acre. 2

Water Supply Intakes. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization. 16

Shellfish Beds. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4. 17.

States or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies; asphalt, etc.) and material used for construction or discharged must be free from toxic Suitable Material. No activity, including structures and work in navigable waters of the United pollutants in toxic amounts (see Section 307 of the Clean Water Act). 8.

Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal. 19.

The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site). (a)

Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment **(P)**

waiver of this requirement. Consistent with National policy, the District Engineer will establish form of mitigation would be more environmentally appropriate and provides a project-specific impacts requiring a PCN, unless the District Engineer determines in writing that some other a preference for restoration of wetlands as compensatory mitigation, with preservation used Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland only in exceptional circumstances. છ

impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, 11/4)-acre of wetlands cannot be created to change a \3/4\-acre loss of wetlands to a 11/21-acre loss associated with NWP 39 verification. However, 11/21-acre of Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those created wetlands can be used to reduce the impacts of a 11/21-dere loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs. 9

- (e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the
- (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation for wetland impacts.
 - (g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.
- (h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.
- 20. Spawning Areas. Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.
 - Maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum exent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

- 22. Adverse Effects From Impoundments. If the activity, including structures and work in navigable waters of the United States or discharge of dredged or fill material, creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.
 23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, into breeding areas for migratory waterfowl
- must be avoided to the maximum extent practicable.

 24. Removal of Temporary Figs. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

- 25. <u>Designated Critical Resource Waters</u>. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, State natural heritage sites, and outstanding national resource waters or other waters officially designated by a State as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.
 - (a) Except as noted below, discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the United States may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed treatened endangered species if the activity complies with General Condition 1 and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service has concurred in a determination of compliance with this condition.
- (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after he determines that the impacts to the critical resource waters will be no more than minimal.
- Fills Within 100-Year Floodplains. For purposes of this general condition, 100-year floodplains will
 be identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate
 Maps or FEMA-approved local floodplain maps.
 - (a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.
- (b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent abovegrade fills, are not authorized by NWPs 39, 40, 42, and 44.
 - (c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.
- 27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project). For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps. For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

Further Information:

- District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
- NWPs do not obviate the need to obtain other Federal, State, or local permits, approvals, or authorizations required by law.
 - NWPs do not grant any property rights or exclusive privileges.
- 4. NWPs do not authorize any injury to the property or rights of others.
- 5. NWPs do not authorize interference with any existing or proposed Federal project.

Section 401 Water Quality Conditions. No additional permit will be required except in the following cases:

- 1. When compensatory mitigation is in the form of the purchase of mitigation bank credits and the bank is not located within the same hydrologic unit or an adjacent hydrologic unit within the same river watershed as the impacted site by the Hydrologic Unit Map of the United States, 1980, unless the conditions listed in Section 62.1-44.15:5E of the Code of Virginia relating to bank and impact type and location are met.
- When compensatory mitigation involves only the preservation of wetlands and/or wetland or upland vegetated buffers without accompanying creation or restoration of wetlands or the purchase of mitigation bank credits, or does not meet the goal of no net loss of wetland acreage and function.
- For the location of a stormwater management facility in perennial stream or in oxygen or temperature impaired waters.
- 4. For impacts to perennial streams in excess of 500 linear feet and for impacts to intermittent streams in excess of 1500 linear feet.
- 5. For any water withdrawal project.
- 6. For associated intake structures or for the purpose of transporting non-potable raw surface water.